

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VERIZON BUSINESS NETWORK SERVICES, INC.,
Petitioner,

v.

HUAWEI TECHNOLOGIES CO., LTD.,
Patent Owner.

IPR2020-01079
Patent 7,609,288 B2

Before TREVOR M. JEFFERSON, PATRICK M. BOUCHER, and
KEVIN C. TROCK, *Administrative Patent Judges*.

BOUCHER, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining Some Challenged Claims Unpatentable
35 U.S.C. § 318(a)

In response to a Petition (Paper 2, “Pet.”) filed by Verizon Business Network Services, Inc. (“Petitioner”), we instituted an *inter partes* review of 1, 2, 5–7, 9, 10, 12, and 14 of U.S. Patent No. 7,609,288 B2 (Ex. 1001, “the ’288 patent”). Paper 10 (“Dec.”). During the trial, Huawei Technologies Co., Ltd. (“Patent Owner”) filed a Response (Paper 18, “PO Resp.”), Petitioner filed a Reply (Paper 21, “Reply”), and Patent Owner filed a Sur-reply (Paper 30, “Sur-reply”). An oral hearing was held with the parties, and a copy of the transcript was entered into the record. Paper 32 (“Tr.”).¹

We have jurisdiction under 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of the claims on which we instituted trial. Based on the record before us, Petitioner has shown, by a preponderance of the evidence, that claims 1, 2, 5, 7, 9, 10, 12, and 14 are unpatentable. Petitioner has not shown, by a preponderance of the evidence, that claim 6 is unpatentable.

I. BACKGROUND

A. *The ’288 Patent*

1. *Overview*

The ’288 patent describes “a method for transferring desktop information of a PC to a video communication terminal and an apparatus thereof.” Ex. 1001, 1:17–20. Such method and apparatus are described in the context of a videoconferencing system that “needs to transfer desktop information, such as films or file information, to the remote video

¹ Although Petitioner appeared at the oral hearing, it did not make a presentation and instead “rest[ed] on the arguments presented in its papers and the supporting exhibits.” Tr. 6:12–16.

communication terminal at the same time while a local image such as an image taken by a video camera is transferred.” *Id.* at 1:24–29.

Figure 1 of the '288 patent is reproduced below.

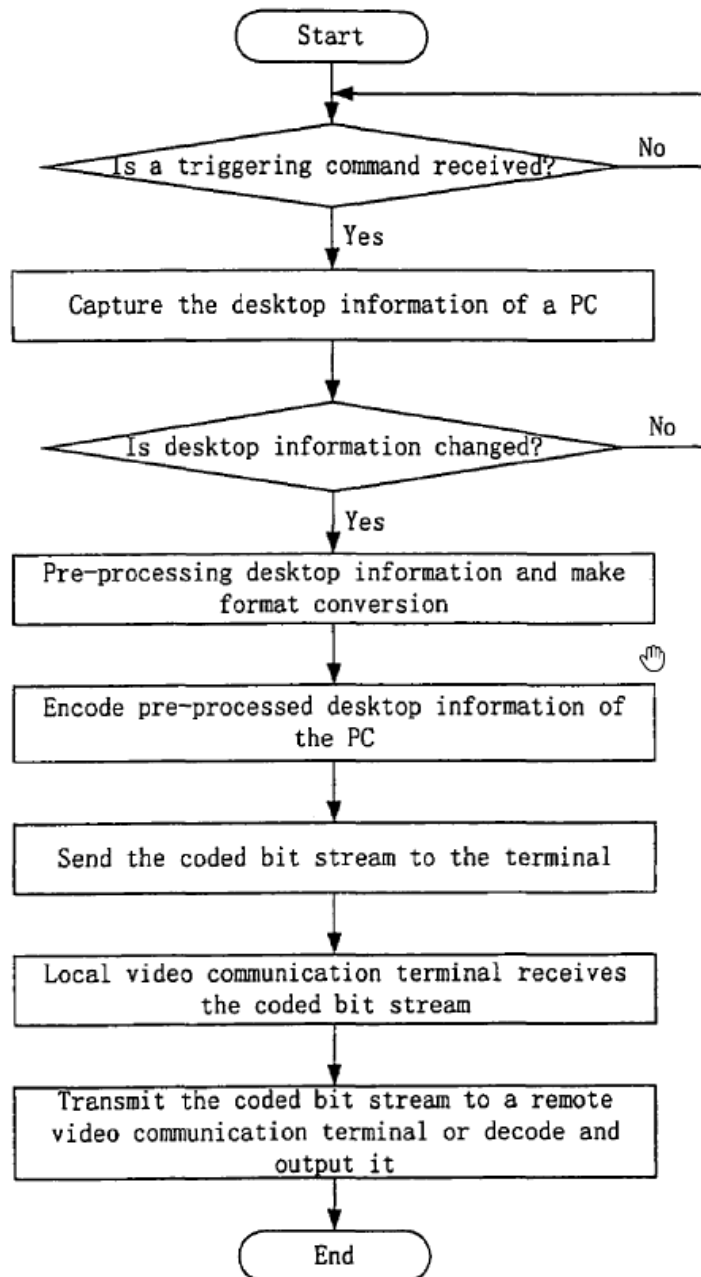


Fig. 1

Figure 1 is a flowchart illustrating a method for transferring information from the desktop to the terminal. *Id.* at 2:61, 3:7–10. Although the drawing does not include reference numbers, the patent refers to steps with cardinal numbers whose correspondence with diagram blocks is readily inferred. *See id.* at 3:9–43. At “Step 1,” the method waits for a trigger command from a capture driver. *Id.* at 3:11–12. At “Step 2,” after the trigger command is received, desktop information is captured and a determination made whether the desktop information has been changed. *Id.* at 3:13–15. If it has, the method proceeds to “Step 3”; otherwise, the method returns to “Step 1.” *Id.*

At “Step 3,” “various pre-process[es]” for the desktop information are made, “based on requirement.” *Id.* at 3:16–17. At “Step 4,” the “PC format” of the desktop information is converted to “a format of a local video communication terminal.” *Id.* at 3:18–19. At “Step 5,” the desktop information is encoded into a video bit stream. *Id.* at 3:20–28. At “Step 6,” the coded bit stream is sent to the local video communication terminal. *Id.* at 3:29–30. At “Step 7,” the coded bit stream is received by the local video communication terminal. *Id.* at 3:31–32. At “Step 8,” the coded bit stream is decoded and sent to a local output device to display desktop information. *Id.* at 3:33–43.

Figure 4 of the ’288 patent is reproduced below.

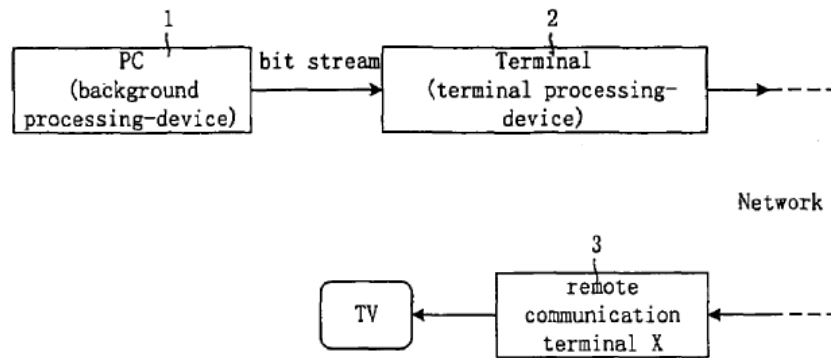


Fig. 4

Figure 4 illustrates a system on which the method of Figure 1 may be embodied. *Id.* at 2:67. As shown in the drawing, the PC has background processing device 1 to capture desktop information of the PC, which is encoded and sent, through a network port, to the local video communication terminal, which has terminal processing device 2. *Id.* at 3:44–48. The local video communication terminal forwards the received coded bit stream to remote video communication terminal 3. *Id.* at 3:48–51.

2. Illustrative Claims

Independent claims 1 and 9 are illustrative of the challenged claims and are reproduced below.

1. A method for transferring desktop information of a PC to a video communication terminal, comprising,
 - a) capturing desktop information of the PC after receiving a triggering command, and converting a PC format of

the desktop information into a format of a local video communication terminal;

b) encoding the converted desktop format in a mode ensured by the local video communication terminal;

c) sending the coded bit stream to the local video communication terminal;

d) receiving the coded bit stream by the local video communication terminal and transferring to a remote video communication terminal through transmission channel after processing.

Ex. 1001, 4:58–5:4.

9. An apparatus for transferring desktop information of a PC to a video communication terminal, comprises,

a background processing-device, capturing desktop information of the PC, converting the captured desktop information from a PC format to a format of a local video communication terminal, encoding the converted format to a coded bit stream and outputting;

a terminal processing-device, transferring the coded bit stream from the background processing-device to a remote video communication terminal.

Ex. 1001, 5:33–42.

3. Prosecution History

The application that matured into the '288 patent was filed on February 2, 2005, as a continuation of PCT Appl. No. PCT/CN03/00067, filed on August 4, 2003. Ex. 1001 at codes (22), (63). The '288 patent also claims foreign priority to Chinese Appl. No. 02128762.7, filed on August 7, 2002. *Id.* at code (30).

Shortly after filing the application, the Applicant submitted an Information Disclosure Statement that disclosed, among other references,

U.S. Patent No. 5,854,892 (“Liu”). Ex. 1002, 37. Subsequently, the Examiner issued a Non-Final Office Action that rejected independent claim 1, as well as other claims, for obviousness over U.S. Patent Publ. No. 2002/0154204 (“Kenoyer”) and U.S. Patent No. 6,073,192 (“Clapp”). *Id.* at 134–136. As Petitioner asserts, “Kenoyer was cited for essentially all elements of Claim 1 other than a triggering command; Clapp disclosed a videoconference system using a triggering command.” Pet. 12 (citing Ex. 1002, 134–136). After the Applicant traversed the obviousness rejections, with minor clarifying amendments to the claims, the Examiner allowed the application without providing express reasons for allowance. Ex. 1002, 151–163, 167–170. As part of this traversal, the Applicant characterized claim 1 as “relat[ing] to the solution of transferring desktop information of a PC to a video communication terminal, and the desktop information of a PC is transferred in a digital coded bit stream.” *Id.* at 159.

B. Evidence

Petitioner relies on the following references:

Kenoyer	US 2002/0154209 A1	Oct. 24, 2002	Ex. 1005
Clapp	US 6,073,192	June 6, 2000	Ex. 1006
Shaw	US 5,611,038	Mar. 11, 1997	Ex. 1007
Becker	US 2002/0149617 A1	Oct. 17, 2002	Ex. 1009
Kenoyer '423	US 9,769,423 B2	Sept. 19, 2017	Ex. 1010

Wolfgang Effelsberg and Ralf Steinmetz, *Video Compression Techniques* (Verlag 1998), pp. 58–65 (Ex. 1008) (“Video Compression”).

In addition, Petitioner relies on Declarations by Samrat Bhattacharjee, Ph.D. Exs. 1004, 1020. Dr. Bhattacharjee was cross-examined by Patent Owner, and a transcript of his deposition has been entered into the record.

Ex. 2025. Patent Owner relies on Declarations by Tajana Šimunić Rosing, Ph.D. Exs. 2013, 2022. Dr. Rosing was cross-examined by Petitioner, and a transcript of her deposition has been entered into the record. Ex. 1021.

C. Instituted Grounds of Unpatentability

Petitioner challenges claims 1, 2, 5–7, 9, 10, 12, and 14 on the following grounds. Pet. 22.

Claims Challenged	35 U.S.C. §²	Reference(s)
1, 2, 5–7, 9, 10, 12, 14	103(a)	Becker, Kenoyer '423
1, 2, 5–7, 9, 10, 12, 14	103(a)	Kenoyer, Clapp, Shaw
1, 2, 5–7, 9, 10, 12, 14	103(a)	Kenoyer, Clapp, Video Compression

D. Real Parties in Interest

Petitioner identifies Verizon Business Network Services, Inc. and Cisco Systems, Inc. as real parties in interest. Pet. 1. In addition, “out of an abundance of caution in light of prior challenges to the named real parties-in-interest in separate and unrelated IPR petitions,” Petitioner further identifies Verizon Communications Inc., Cellco Partnership d/b/a Verizon Wireless, and Verizon Corporate Resources Group LLC, “solely to the extent that Patent Owner contends that these separate legal entities should be named real parties-in-interest.” *Id.* Petitioner additionally notes that Verizon Communications Inc. “has several hundred affiliated entities and

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended various provisions of 35 U.S.C. Because the '288 patent was filed before March 16, 2013 (the effective date of the relevant amendment), the pre-AIA versions of those provisions apply.

each of these entities agrees to be estopped under the provisions of 35 U.S.C. §315 as a result of any final written decision in the requested IPR to the same extent that Petitioner is estopped.” *Id.*

Patent Owner identifies only itself as a real party in interest. Paper 3, 2.

E. Related Matters

The parties identify *Huawei Technologies Co., Ltd. v. Verizon Communications, Inc.*, No. 6:20-cv-00090 (W.D. Tex.) (“the related litigation”) as a related matter. Pet. 2; Paper 3, 2.

II. ANALYSIS

A. Legal Principles

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

³ The parties do not address objective indicia of nonobviousness, which accordingly do not form part of our analysis.

Additionally, the obviousness inquiry typically requires an analysis of “whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”)); see *In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1333 (Fed. Cir. 2016) (citing *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1360 (Fed. Cir. 2006)).

B. Level of Ordinary Skill in the Art

In determining whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham*, 383 U.S. at 17. “The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry.” *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991). The “person of ordinary skill in the art” is a hypothetical construct, from whose vantage point obviousness is assessed. *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998). “This legal construct is akin to the ‘reasonable person’ used as a reference in negligence determinations” and “also presumes that all prior art references in the field of the invention are available to this hypothetical skilled artisan.” *Id.* (citing *In re Carlson*, 983 F.2d 1032, 1038 (Fed. Cir. 1993)).

Factors pertinent to a determination of the level of ordinary skill in the art include “(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity

with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field.” *Envtl. Designs, Ltd. v. Union Oil Co. of Cal.*, 713 F.2d 693, 696–697 (Fed. Cir. 1983) (citing *Orthopedic Equip. Co. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376, 1381–82 (Fed. Cir. 1983)). “Not all such factors may be present in every case, and one or more of these or other factors may predominate in a particular case.” *Id.*

Petitioner proposes that a person of ordinary skill in the art: would have had a working knowledge of distributed systems generally and videoconferencing systems and screen sharing specifically. This knowledge would have included knowledge of the processing, compression/decompression, and communication protocols of video signals used in such systems. EX1004, ¶24. A [person of ordinary skill in the art] would have had a bachelor’s degree in computer science, computer engineering, or an equivalent, and one to two years of professional experience with distributed multimedia systems. *Id.* Lack of work experience can be remedied by additional education, and vice versa. *Id.*

Pet. 22–23. Petitioner supports its proposal with testimony by Dr. Bhattacharjee. Ex. 1004 ¶ 24. Patent Owner proposes that a person of ordinary skill in the art:

would have had Bachelor’s degree in electrical engineering, computer engineering, computer science, or a related field, and at least 2-3 years of experience in the design or development of telecommunication systems, or the equivalent. Additional graduate education could substitute for professional experience, or significant experience in the field could substitute for formal education.

PO Resp. 16. Patent Owner supports its proposal with testimony by Dr. Rosing. Ex. 2020 ¶ 16.

Both proposals appear reasonable on the record before us. Although we invited the parties “to address whether material differences exist between their respective proposals and what impact, if any, the different proposed levels have on the obviousness analysis,” neither party has done so. *See* Dec. 11 n.3. We apply the proposal articulated by Patent Owner, but we would reach the same conclusions under either proposal.

D. Claim Construction

The Board uses “the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b) (2019); *see Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). The specification may reveal a special definition given to a claim term by the patentee. *Phillips*, 415 F.3d at 1316. If an inventor acts as his or her own lexicographer, the definition must be set forth in the specification with reasonable clarity, deliberateness, and precision. *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1249 (Fed. Cir. 1998).

1. “capturing desktop information”

Independent claims 1 and 9 both recite “capturing desktop information of the PC.” Ex. 1001, 4:60, 5:35–36. Patent Owner contends that “[p]roperly construed in a manner with the intrinsic record, the phrase ‘capturing desktop information of the PC’ . . . means ‘capturing a digital signal of desktop information of the PC.’” PO Resp. 17. That is, Patent

Owner proposes adding the words “a digital signal” to the “capturing” limitation of the independent claims as a matter of claim construction. We are not persuaded that the record supports such an addition.

In advancing its position, Patent Owner places considerable weight on the ’288 patent’s statement that “[a]dvantages of the invention [include that] [d]esktop information of a PC is transferred directly in a digital coded bit stream mode without converting digital signal to analog signal, so the clarity on the video communication terminal is raised.” Ex. 1001, 2:35–39.

According to Patent Owner, “the invention of [the] ’288 Patent achieves the advantage of capturing a digital signal of desktop information of the PC ‘without’ such information being an analog form.” PO. Resp. 17. Patent Owner makes two points in support of this position.

First, Patent Owner observes that the ’288 patent does not explicitly disclose the use of an analog-to-digital converter, which Patent Owner contends would be required if the captured signal were analog. *Id.* As Dr. Rosing testifies, “were it otherwise (*i.e.*, using an analog signal of the desktop information), the system would have disadvantageously required an additional conversion to a digital coded bit stream for transfer.” Ex. 2022 ¶ 36.

Second, Patent Owner contends that the ’288 patent provides “context” for the stated advantage through “disparage[ment]” of a certain prior-art solution for simultaneous transfer of desktop information and a local video image to the remote video communication terminal. PO Resp. 17–18; *see* Ex. 1001, 1:24–29. In this solution (identified as the “second” prior-art solution in the ’288 patent), three steps are performed: (1) the desktop information is transformed to a standard Phase Alternating Line /

National Television System Committee (“PAL/NTSC”⁴) format signal by a Video Graphic Array (“VGA”) converter; (2) the PAL/NTSC format signal is input to a videoconference terminal as one of the video source signals; and (3) the desktop information is transferred to a remote video communication terminal after processing by the videoconference terminal. Ex. 1001, 1:36–43. We agree with Patent Owner that this solution is disparaged by the ’288 patent through its statement that “there is a loss during converting a digital signal to an analog signal in the VGA converter, so that clarity of all images that pass through the VGA converter decreases greatly” and that “slight[]” correction can be achieved with a “complicated” operation that nevertheless leaves the image quality “unsatisfactory.” *Id.* at 1:49–56.

Third, Patent Owner contends that its proposed construction “aligns with the prosecution history of the ’288 Patent.” PO Resp. 18. As we also note above, *supra* § I.A.3., Patent Owner observes that, when traversing the rejection of claim 1 for obviousness over Kenoyer and Clapp, the “Applicant argued that claim 1 “relates to the solution of transferring desktop information of a PC to a video communication terminal, and the **desktop information of a PC is transferred in a digital coded bit stream.**” *Id.* (quoting Ex. 1002, 159) (alterations by Patent Owner). According to Patent Owner, “[t]his part of the prosecution history ‘provides evidence of how the PTO and the inventor understood the patent.’” *Id.* (quoting *Phillips*, 415 F.3d at 1317).

The principal difficulty with Patent Owner’s arguments is that they improperly conflate *transferring* desktop information with the claim’s

⁴ The ’288 patent instead uses the uncommon acronym “PAUNTSC,” presumably a result of incorrectly printing “L/” as “U.”

recitation of “*capturing*” desktop information. Indeed, Dr. Bhattacharjee concedes that “the desktop information as described in the ’288 patent is *transferred* in digital form,” even as he maintains his opinion that desktop information is not limited to digital *capture* by the ’288 patent. Ex. 1020 ¶ 11. There is thus no dispute among the expert witnesses, nor the parties, that the ’288 patent describes the digital transfer of desktop information. As Dr. Bhattacharjee explains, this is a consequence of the fact that “the [’288] patent describes and claims transferring desktop information only after it is encoded.” Ex. 1020 ¶ 12. Because such encoding occurs only after the desktop information is captured, “the captured desktop information could either be digital or analog.” *Id.*

The aspects of the intrinsic record that Patent Owner identifies as supporting its proposed construction are, in fact, consistent with this distinction between capture and transfer. For example, the “advantage of the invention” identified by Patent Owner is specifically described by the ’288 patent as raising clarity on the video communication terminal when “[d]esktop information of a PC is *transferred* directly in a digital coded bit stream mode without converting digital signal to analog signal.” *See* Ex. 1001, 2:35–39 (emphasis added). This is, moreover, consistent with the portion of the prosecution history Patent Owner identifies and which also makes clear that “the desktop information of a PC is *transferred* in a digital coded bit stream.” Ex. 1002, 159 (emphasis added). Petitioner’s expert, Dr. Bhattacharjee “agree[s] the desktop information as described in the ’288 patent is *transferred* in digital form,” even though it is not *captured* in digital form. Ex. 1020 ¶ 11.

And although the '288 patent's remarks about the "second" prior-art solution it describes act to disparage digital-to-analog conversion, all of the signals involved in that solution are *analog* signals. *See id.* ¶ 13 (Dr. Bhattacharjee testifying that "[a]ll three of these formats," i.e. PAL, NTSC, and VGA, are analog); Ex. 1021, 132:7–8 (Patent Owner's expert, Dr. Rosing, agreeing on cross-examination that PAL, NTSC, and VGA are analog). We find persuasive Dr. Bhattacharjee's reasoning that a person of ordinary skill in the art would understand that, because desktop information can be "transformed" between two analog signals, the desktop information need not be digital. *See* Ex. 1020 ¶¶ 13, 15. Although Patent Owner appears to suggest that we should disregard the experts' consistent statements underlying this point in favor of its own interpretation of the '288 patent, we find insufficient reason to do so. *See* Sur-reply 3 ("Thus, *regardless of statements by either expert*, the '288 Patent itself shows that 'transforming the desktop information' involves starting with a captured *digital* signal.") (unbolded emphasis added)).

For these reasons, we decline to graft a digital requirement onto the "capturing" limitation and apply the plain and ordinary meaning of "desktop information" as information representing a desktop. *See* Ex. 1020 ¶ 15.

2. "bit stream"

Petitioner proposes that the term "bit stream," recited in independent claims 1 and 9, as well as certain challenged dependent claims, be construed to mean "a continuous stream of bits transmitted over a channel with no separators between the character groups." Pet. 19. Petitioner contends that "[b]it stream' is a term of art" and that its proposal conforms with two

technical dictionary definitions. *Id.* When deciding to institute this proceeding based on the preliminary record, we declined to adopt Petitioner’s proposal, which was also not adopted by the district court in the related litigation. Dec. 12.

The parties have not revisited this preliminary determination during the trial and we see no compelling reason to reach a different determination based on the full record. We accordingly construe “bit stream” in accordance with its plain and ordinary meaning as a stream of bits.

E. Obviousness over Becker and Kenoyer ’423

1. Overview of Becker

Becker relates to “Remote Collaboration” in which physically separated persons or groups collaborate using “computer-generated information and graphics displays with other high-resolution video sources, and with each other, in a real-time mode.” Ex. 1009 ¶ 2. In particular, Becker address “effectively transport[ing] a highly complex, expensive, computer environment from a local location to one or more remote locations without once again incurring the significant cost of creating the environment at the remote location(s).” *Id.* ¶ 18. Figure 1 of Becker is reproduced below.

Figure 1: Generalized representation of the structure of and method for use of the Remote Collaboration System.

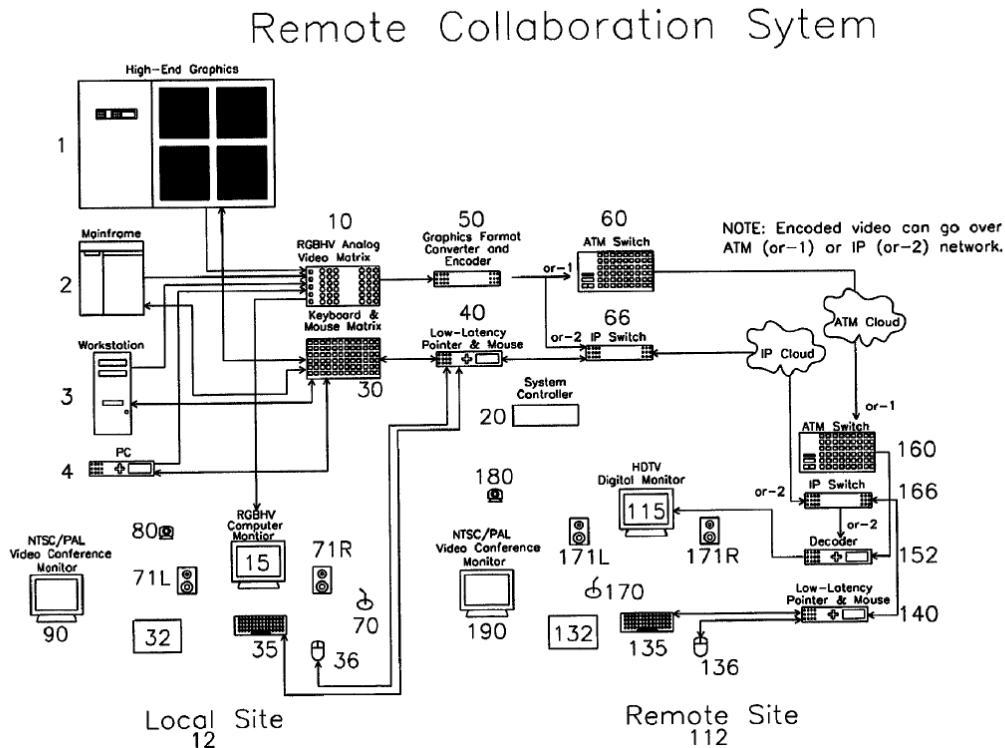


Figure 1 provides a generalized representation of a remote-collaboration system. *Id.* ¶ 24. As illustrated in the drawing, “computer RGB information is routed from the computer 1, 2, 3, 4 to both a monitor 15R at the local location and also to a graphics format converter and encoder 50.” *Id.* ¶ 48. Then, “[t]he encoded signals are sent over [asynchronous transfer mode switch (‘ATM’)] 60 or the Internet 64 to a decoder 152 at the remote location 112,” where they are “converted back and viewed either on an HDTV-capable monitor 115R, or a normal analog-RGB computer monitor.” *Id.*

With respect to the transfer of information from the local site to the remote site, Becker explains that “[a]n RGB signal leaves the selected computer 1, 2, 3, 4 and goes into the video matrix switch 10,” where it “is split in two.” *Id.* ¶ 53. “One of the signals 11 goes directly to the local site

12 where it is viewed on the local monitor or projector 15L, 15R” and “[t]he other signal gets transmitted to the remote site 90.” *Id.* Before being transmitted to the remote site, the RGB signal is processed by first being “converted to a digital format” and then “compressed, for example using MPEG-2 (other compression means being MPEG-1, MPEG-4, Wavelet-Based, Fourier, etc.).” *Id.* ¶ 54. “The[] compressed digital signal is transmitted using, for example ATM 60 (other means being Internet 64 or any other communications protocol) to a remote location,” where “the compressed digital signal is decompressed, decoded and viewed, for example, on an HDTV monitor.” *Id.*

This is illustrated with Figure 4C of Becker, reproduced below.

^{4-c}
Figure : HDTV signal connectivity.

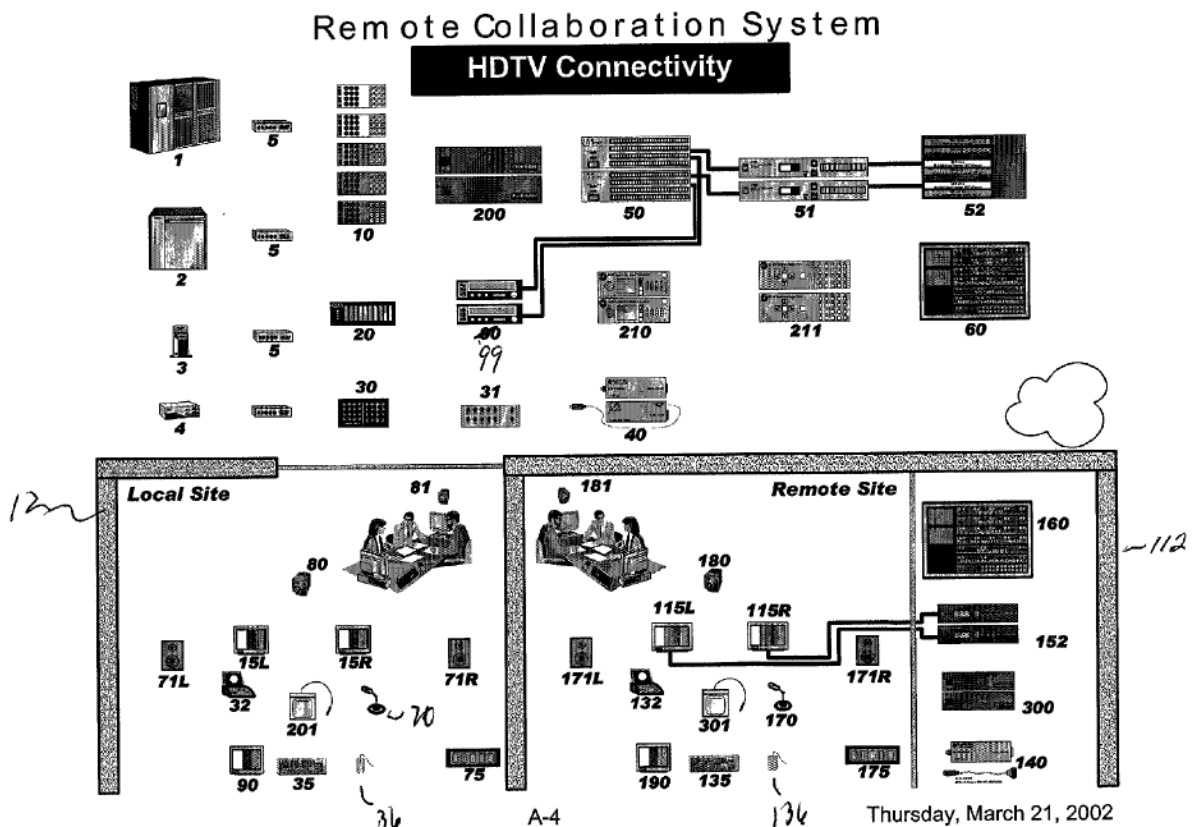


Figure 4C, above, “shows the connectivity path for HDTV signals.” *Id.*

¶ 30. From ATM switch 160, located at the remote location, the signals are sent into MPEG decoder device 152. *Id.* ¶ 78. MPEG decoder device 152 decodes the signals and converts them back into the full-bandwidth standard digital HDTV signal. *Id.* From there, “the signals can be directed into a digital HDTV monitor for viewing (115L, 115R)” or may be sent into another device (not shown in the drawing) that converts the digital HDTV signals back to analog signals that are viewable on standard analog video displays. *Id.*

2. Overview of Kenoyer '423

Kenoyer '423 describes “[d]ual stream communication . . . for integration of a coupled personal computer or a laptop computer with an existing videoconferencing system.” Ex. 1010, 2:48–50. A card that includes firmware for launching software is installed into the integrated computer. *Id.* at 2:57–61.

Figure 2 of Kenoyer '423 is reproduced below.

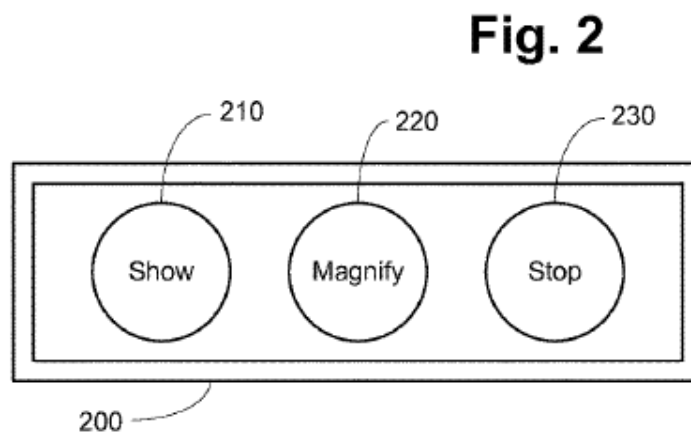


Figure 2, above, illustrates an interface displayed when an application provided by the card is launched. *Id.* at 2:36, 3:1–4. Interface 200 is displayed on the computer screen and shows a plurality of buttons that include Show PC button 210, Magnify button 220, and Stop button 230. *Id.* at 3:4–6. By selecting interface 200, such as with a mouse, “a user is enabled to give a presentation loaded in the videoconferencing system such as a PowerPoint® presentation.” *Id.* at 3:7–10. “Clicking on Show PC button 210 will send a presentation loaded into a laptop or personal computer from the video-conferencing System to a remote site.” *Id.* at 3:11–13.

3. Independent Claim 1

a. Preamble

In addressing independent claim 1, Petitioner contends that, should the preamble be found limiting, both Becker and Kenoyer ’423 teach a “method for transferring desktop information of a PC to a video communication terminal.” Pet. 28–30. In particular, Petitioner notes that Figure 1 of Becker illustrates structure that performs such a method by processing and sending signals to a remote site through a local ATM switch, which sends the signal to an ATM switch at the remote location for display on a remote video HDTV digital monitor or other remote display device. *Id.*

at 29 (citing Ex. 1009 ¶ 48).⁵ In addition, Petitioner points to Kenoyer '423's sending of a PowerPoint® presentation loaded into a laptop or personal computer to a remote site. *Id.* at 30 (citing Ex. 1010, 3:11–22; Ex. 1004 ¶ 103). Patent Owner does not dispute that both references disclose such a method, and we determine, to the extent the preamble is limiting, that Petitioner provides sufficient identification of such a method.

b. “Capturing” Limitation

Independent claim 1 recites “capturing desktop information of the PC after receiving a triggering command, and converting a PC format of the desktop information into a format of a local video communication terminal.” Ex. 1001, 4:60–63. With respect to this “capturing” limitation, Petitioner identifies Becker's teaching of capturing graphics signals output from the computer in their raw format, and converting the analog RGBHV signals to serial digital high-definition television. Pet. 30–31 (citing Ex. 1009 ¶¶ 20, 71). Recognizing that the limitation requires such capturing of desktop

⁵ For completeness, and because it impacts how Petitioner's arguments are understood in our discussion of the limitations recited in the body of claim 1, we note that Patent Owner argued in its Preliminary Response that “Petitioner appears to cite to Becker's ‘ATM computer network switch (60)’ as being a ‘local video communication terminal.’” Paper 6, 39–40 (citing Pet. 33–34). We rejected Patent Owner's preliminary argument (which is not repeated in its Response) that “Petitioner fails to explain how HDTV format is a ‘format of a local video communication channel,’ or more specifically, how HDTV format is a format of ‘ATM computer network switch.’” *Id.* at 41 (citing Ex. 2013 ¶¶ 74–76). Specifically, we found—and continue to find—that “it is sufficiently evident from Petitioner's discussion of the preamble that Petitioner properly understands that signals in Becker are sent to an ATM switch at the remote location for display on a remote video HDTV digital monitor.” Dec. 19 (citing Pet. 29).

information to be “after receiving a triggering command,” Petitioner identifies Kenoyer ’423’s teaching that clicking on the Show PC button sends a loaded presentation to the remote site. *Id.* at 31 (citing Ex. 1010, 2:48–50, 3:11–13).

According to Petitioner, a person of ordinary skill in the art would have found it obvious to modify Becker to use such a triggering command, as taught by Kenoyer ’423, because “Becker recognizes the benefits of minimizing bandwidth usage.” *Id.* at 31–32. Petitioner supports this reasoning with testimony by Dr. Bhattacharjee, who cites Becker’s specific recognition that “if one wants to minimize the amount of bandwidth required to send that information, then one can employ signal compression techniques.” Ex. 1004 ¶ 107; Ex. 1009 ¶ 70. Dr. Bhattacharjee also supports Petitioner’s argument with his characterization of Kenoyer ’423’s teaching as “reduc[ing] the required bandwidth by sending image signals only if change or movement is detected.” Ex. 1004 ¶ 107.

Patent Owner disputes Petitioner’s analysis on two principal bases: (1) that “the alleged ‘desktop information of the PC’ in Becker comprises a captured analog signal rather than a digital signal,” PO Resp. 19; and (2) that Petitioner articulates insufficient reasoning to effect the combination of references to use Kenoyer ’423’s triggering command with Becker’s method, *id.* at 35–45. We summarily dispose of Patent Owner’s analog-signal argument because it is not consistent with the construction we adopt for “capturing desktop information.” *See supra* § II.D.1. That is, we disagree that challenged independent claim 1 requires capturing a *digital signal* of the desktop information of the PC, such that we determine

Petitioner's identification of the capture of an *analog signal* by Becker to be sufficient.

With respect to Petitioner's articulation of reasons for incorporating Kenoyer '423's triggering command within the method set forth by Becker, we previously observed that "Petitioner's rationale for the combination is brief," and that "Dr. Bhattacharjee provides similarly terse support." Dec. 19. Patent Owner responds that Petitioner's "reasoning is not just 'terse'—it is wrong." PO Resp. 35. In addition, Patent Owner faults Petitioner for "fail[ing] to explain how the proposed combination of Becker and Kenoyer '423 would operate." *Id.* at 38. Petitioner elaborates on these aspects of its reasoning in its Reply in a manner that Patent Owner characterizes as "backfill[ing] the shortcomings of [Petitioner's] original theory." *See* Reply 11–16; Sur-reply 6. Although we have considered Patent Owner's contention that "Petitioner's Reply presents new arguments that are belated, legally erroneous, and factually incorrect," we are not persuaded that Petitioner's Reply arguments are improper. *See Apple Inc. v. Andrea Elecs. Corp.*, 949 F.3d 697, 705–707 (Fed. Cir. 2020) (discussing requirements for determining propriety of reply arguments in an *inter partes* review).

"It is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify 'with particularity' the 'evidence that supports the grounds for the challenge to each claim.'" *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3)). "A reply may only respond to arguments raised in the corresponding opposition, patent owner preliminary response, or patent owner response." 37 C.F.R. § 42.23(b).

First, Patent Owner contends that Petitioner's motivation of minimizing bandwidth usage is based on an incorrect characterization by Petitioner of Kenoyer '423. PO Resp. 36–37. The relevant paragraph of Kenoyer '423 makes the following statements regarding bandwidth usage in its disclosed videoconferencing system:

Interface 200 allows a presenter to select to stream a compressed and scaled image from a computer screen to a videoconferencing system. The videoconferencing system displays the scaled image as a live graphic on a remote monitor. The live graphic image can be viewed locally and also remotely during a videoconference. The remote monitor shows a live view of the presenter and the computer screen at the same time. In this exemplary embodiment, connection bandwidth is dynamically shared between the graphic image and the presenter's video image. Therefore, when the computer screen is not changing, all of the bandwidth can be devoted to showing the live view of the presenter.

Ex. 1010, 3:37–48.

In considering this disclosure, Patent Owner specifically disagrees with Petitioner's reliance on Dr. Bhattacharjee's assertion that Kenoyer '423 teaches "reduc[ing] the required bandwidth by sending image signals only if change or movement is detected." PO Resp. 36. According to Patent Owner, Kenoyer '423 instead "teaches that bandwidth is shared between presentation of the live view and the computer screen so that no **additional** bandwidth is needed." *Id.* Patent Owner thus contends that "there is no change to bandwidth usage" in Kenoyer '423, and therefore no "reduction in bandwidth[]" when the computer screen is being shared remotely." *Id.*

Petitioner responds to Patent Owner's distinction between "shared" bandwidth and "saved" bandwidth by identifying "three reasons a [person of

skill in the art] would be motivated to combine even when bandwidth is shared”: (1) “the shared nature of the bandwidth only highlights that reduced bandwidth usage for desktop information provides the capability of a higher quality signal for the live stream without any extra costs in components or processing”; (2) because Kenoyer ’423 “does not disclose using a *dedicated or fixed amount* of bandwidth . . . , any reduction in bandwidth would reduce overall usage”; and (3) “even in a dedicated environment, Kenoyer ’423’s reduced bandwidth needs for desktop information would reduce the amount of dedicated bandwidth that is required, potentially saving costs or power.” Reply 12 (citing Ex. 1020 ¶¶ 31–32). These reasons are directly responsive to arguments raised by Patent Owner in its Response and are therefore properly considered. *See* 37 C.F.R. § 42.23(b). We also find such reasons, which are supported by additional testimony by Dr. Bhattacharjee, adequately explain how Patent Owner’s distinction is accommodated within Petitioner’s expressed rationale of “minimizing bandwidth usage.” *See* Ex. 1020 ¶¶ 31–32.

Second, Patent Owner contends that, if “Kenoyer ’423 were interpreted as teaching reducing bandwidth, it does so in a different manner than in Becker.” PO Resp. 37. Specifically, “Becker addresses bandwidth reduction by using signal compression techniques,” Patent Owner says, while “Kenoyer ’423 prevents the increase in bandwidth . . . by dynamically sharing bandwidth when both a live view of the presenter and the presenter’s computer screen are being shared.” *Id.* Dr. Bhattacharjee disputes this distinction by observing that Kenoyer ’423’s technique still “reduces the number of bits required to convey the same video information,” and is thereby broadly encompassed as a form of “signal compression.” Ex. 1020

¶ 33. Dr. Rosing does not specifically disagree with Dr. Bhattacharjee’s characterization. *See generally* Ex. 2022 ¶ 99. Regardless, both Becker and Kenoyer ’423 support Petitioner’s rationale of “minimizing bandwidth usage.” Patent Owner inadequately explains how a distinction in the precise manner that might be accomplished by the two references diminishes the support provided by the rational underpinnings identified by Petitioner. *See* PO Resp. 37 (Patent Owner making the conclusory statement that “[a]s such, Petitioner fails to provide a valid motivation for combining Becker and Kenoyer ’423”).

Third, Patent Owner contends that Petitioner’s rationale for combining the reference teachings is inadequate because “Petitioner fails to explain how the proposed combination of Becker and Kenoyer ’423 would operate.” PO Resp. 38. We disagree with this contention because Petitioner’s analysis makes clear that it relies on Becker for the “capturing” limitation, “modif[ied] . . . with Kenoyer ’423’s teachings of a triggering command for capturing desktop information.” *See* Pet. 31 (citing Ex. 1004 ¶ 107).

In advancing its contention, Patent Owner emphasizes that Becker teaches capturing an analog video output, while Kenoyer ’423 teaches the capture of digital data: “It is unclear how these two systems, which each capture data in different forms (analog versus digital), would be combined.” PO Resp. 39. Patent Owner’s complaint about Petitioner’s showing is less about *how* the reference *teachings* would be combined (i.e., modify Becker to use a triggering command as taught by Kenoyer ’423) and more about physical integration of the separate systems.

This is evident, for example, from Patent Owner’s discussion of whether Petitioner’s proposed modification of Becker is contrary to its principle of operation or otherwise unsatisfactory for its intended purpose. *See id.* at 40–45. According to Patent Owner, incorporation of Kenoyer ’423’s triggering command in Becker’s system would result in “significant defects.” *Id.* at 44. But the defects Patent Owner identifies are the result of attempting to incorporate Kenoyer ’423’s specific structure into Becker’s system, rather than maintaining focus on the *teachings* of Kenoyer ’423 with respect to use of a triggering command. *See id.* at 41–44 (discussing specific implementations of Kenoyer ’423’s triggering command in Becker’s system using multiple computers). And Petitioner properly responds to Patent Owner’s argument by illustrating a structural incorporation that avoids such defects, relying on Becker’s explanation that a single computer may be used, thereby avoiding the use of a matrix switch that contributes to the “defects” Patent Owner identifies. *See* Reply 13–16; Ex. 1009 ¶ 62.

Both parties support their discussion of such structural combinations with testimony by their respective experts. *See* Ex. 2022 ¶¶ 102–107 (testimony by Patent Owner’s expert, Dr. Rosing); Ex. 1020 ¶¶ 34–37 (testimony by Petitioner’s expert, Dr. Bhattacharjee). Notably, Dr. Bhattacharjee testifies that “the purported problems described by Dr. Rosing would have been easily avoided by using Becker’s teachings [such] that it could be used in an environment with a single PC.” Ex. 1020 ¶ 37. Patent Owner does not present testimony by Dr. Rosing to rebut Dr. Bhattacharjee’s assessment, but instead presents attorney argument in its Sur-reply attempting to do so. *See* Sur-reply 8–10.

Ultimately, we need not resolve such a “battle of the experts” because “[c]laims may be obvious in view of a combination of references, even if the features of one reference cannot be substituted physically into the structure of the other reference. What matters in the § 103 nonobviousness determination is whether a person of ordinary skill in the art, having all of the teachings of the references before him, is able to produce the structure defined by the claim.” *Orthopedic Equip. Co. v. U.S.*, 702 F.2d 1005, 1013 (Fed. Cir. 1983); *see also In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (“The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference. . . . Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.”). In this context, we note our general agreement with Petitioner that the ’288 patent provides, at best, sparse functional details and that the challenged claims recite broad features. *See* Reply 16 (“The ’288 Patent provides ***no details*** at all about how it would work, and the claim limitations are stated at a broad level.”). Petitioner adequately identifies teachings in the combination of Becker and Kenoyer ’423 when considered at the level recited in the claims, and provides sufficient articulated reasoning, supported by rational underpinning, to effect the proposed combination.

We accordingly determine that Petitioner makes a persuasive showing with respect to the “capturing” limitation.

c. “Encoding” Limitation

Independent claim 1 recites “encoding the converted desktop format in a mode ensured by the local video communication terminal.” Ex. 1001,

4:64–65. With respect to this “encoding” limitation, Petitioner observes that “Becker teaches encoding the HDTV format signal using MPEG compression.” Pet. 32 (citing Ex. 1004 ¶ 111). Petitioner reasons that the limitation is taught because “MPEG was a well-known video encoding protocol comparable to H.261, which is listed in the ’288 Patent as an example video encoding protocol.” *Id.* at 33 (citing Ex. 1009 ¶¶ 71–72). Dr. Bhattacharjee supports Petitioner’s argument through his testimony that “[t]he encoding [of Becker] is in a mode capable of being processed by switches 60, 66, which serve as local video communications terminals.” Ex. 1004 ¶ 111.

Patent Owner faults the Petition as “simply ignor[ing] the last ten words [of the ‘encoding’ limitation], failing to explain how Becker’s ‘MPEG compression’ is ‘a mode ensured by the local video communication terminal.’” PO Resp. 32. The word “ensured” appears nowhere in the specification of the ’288 patent outside of this recitation in independent claim 1, and does not appear to be a term of art readily understood by those of skill in the art. *See generally* Tr. 15:19–17:22 (discussing meaning of the phrase). At the oral hearing, Patent Owner agreed that it “would [] be fair to say that a mode ensured by the local video communication terminal means that the mode needs to be compatible with the capabilities of the local video communication terminal.” *Id.* at 17:9–15. In doing so, Patent Owner added that this further means “taking into account the specifics that are related to a video communication terminal, things like clarity, and time delay, and things of those nature, because we’re talking about, not just any random device, but one that is dealing with what this patent is about, which is video communications.” *Id.* at 17:16–21.

As Petitioner points out, Patent Owner “concedes that Petitioner explained that this element is satisfied because Becker teaches that MPEG encoding is ‘a mode capable of being processed by [ATM] switches 60, 66, which serve as local video communications terminals.’” Reply 9 (citing PO Resp. 33); *see* Ex. 1004 ¶ 111 (Dr. Bhattacharjee making original statement in direct testimony). Dr. Rosing counters that “Dr. Bhattacharjee does not explain how MPEG compression is related to an ATM switch or conventional data packets of an ATM switch (which generically carry data regardless of the type of data within the payload).” Ex. 2022 ¶ 93. But Patent Owner concedes that “an ATM switch acts upon information in the header area of an ATM packet in order to properly route the packet in the ATM network to its destination.” PO Resp. 34 (citing Ex. 2022 ¶ 94; Ex. 2023, 1:61–64). With support from Dr. Bhattacharjee’s testimony, Petitioner explains that “[s]uch ‘acting upon’ and ‘routing’ of the packets containing the MPEG bit stream is ‘processing’ the coded bit stream contained in the packets.” Reply 9 (citing Ex. 1020 ¶ 30).

Petitioner further observes that the ’288 patent itself “further corroborates Becker’s disclosure of the ‘ensured by’ Limitation.” *Id.* at 11. In particular, the ’288 patent’s description of “Step 5” (i.e., “Encode pre-processed desktop information of the PC” in the flowchart of the ’288 patent’s Figure 1, reproduced above) describes three nonexclusive types of “encoding the desktop information of [the] PC into a video bit stream of which type can be a[n] H.261 bit stream, a[n] H.263 bit stream or a JPEG bit stream etc.” Ex. 1001, 3:20–22. Dr. Rosing conceded on cross-examination that the open-ended nature of this description “might” include MPEG. Ex. 1021, 226:6–25. Having considered and weighed this testimony, we find

that the disclosure of the '288 patent is consistent with Petitioner's position that Becker's MPEG compression is compatible with the capabilities of ATM switch 60, which Patent Owner indicated at the oral hearing is required to meet the limitation.

We accordingly determine that Petitioner makes a persuasive showing with respect to the "encoding" limitation.

d. "Sending" Limitation

Independent claim 1 recites "sending the coded bit stream to the local video communication terminal." Ex. 1001, 4:66–67. For this limitation, Petitioner identifies Becker's disclosure of sending the encoded HDTV signals from the MPEG compression device to the ATM switch. Pet. 33 (citing Ex. 1009 ¶¶ 77, 200–201). Petitioner also supports its position with testimony by Dr. Bhattacharjee that a person of ordinary skill in the art "would understand that such MPEG conversion would encode the information in a video bit stream format." Ex. 1004 ¶ 113. We agree with Petitioner's identification, which Patent Owner does not dispute.

We accordingly determine that Petitioner makes a persuasive showing with respect to the "sending" limitation.

e. "Receiving" Limitation

Independent claim 1 recites "receiving the coded bit stream by the local video communication terminal and transferring it to a remote video communication terminal through transmission channel after processing." Ex. 1001, 5:1–4. For this "receiving" limitation, Petitioner points to an embodiment of Becker in which encoded HDTV signals from the MPEG

compression are sent to ATM switch 60, with information then transmitted to an ATM switch at the remote location. Pet. 34–35 (citing Ex. 1009 ¶ 77). “Once at the remote site, the compressed digital signal is decompressed, decoded and viewed, for example, on an HDTV monitor.” Ex. 1009 ¶ 54. With this identification, Petitioner sufficiently identifies disclosure of the limitation, which Patent Owner does not dispute.

We accordingly determine that Petitioner makes a persuasive showing with respect to the “receiving” limitation.

f. Assessment

Petitioner makes a persuasive showing with respect to each limitation of independent claim 1. We conclude that Petitioner shows, by a preponderance of the evidence, that independent claim 1 is unpatentable under 35 U.S.C. § 103(a) over Becker and Kenoyer ’423.

4. Dependent Claim 2

Claim 2 depends from claim 1 and recites that “Step a further comprises: pre-processing the desktop information captured.” Ex. 1001, 5:5–6. For this limitation, Petitioner identifies Becker’s disclosure of sending RGBHV⁶ video outputs to a signal conditioner and amplifier to boost and normalize signals. Pet. 37. Petitioner contends, supported by the testimony of Dr. Bhattacharjee, that such functions are examples of “pre-processing” such that the limitation is met. *Id.*; Ex. 1004 ¶ 117. Outside of

⁶ Petitioner’s reference to “RGBHC” video outputs appears to be a typographical error. *See* Pet. 37.

its arguments directed at underlying independent claim 1, Patent Owner does not dispute this contention, which we find persuasive.

We conclude that Petitioner shows, by a preponderance of the evidence, that dependent claim 2 is unpatentable under 35 U.S.C. § 103(a) over Becker and Kenoyer '423.

5. Dependent Claim 5

Claim 5 depends from claim 1 and recites that “the desktop information in Step a is captured from a video memory of the PC.” Ex. 1001, 5:17–18. In addressing this limitation, Petitioner observes that Kenoyer '423 teaches capturing a computer-based presentation using a PCMCIA card inserted into laptop computer. Pet. 37 (citing Ex. 1010, 2:57–67). Petitioner reasons that a person of ordinary skill in the art “would have been motivated to implement the Kenoyer '423 image capture in Becker because Becker teaches processing captured image data, and Kenoyer '423 provides a mechanism by which the information to be processed may be captured from the memory of a PC so that the video data may be processed efficiently.” *Id.* at 37–38.

Patent Owner disputes this reasoning by contending that “Petitioner fails to explain ‘how’ the proposed combination of Becker—with teaching of captured analog data—and Kenoyer '423—with its digital trigger—‘was supposed to work.’” PO Resp. 45. In addition, Patent Owner contends that “the combination introduces inefficiencies to the combined system,” particularly as related to signal splitting that Becker uses for simultaneous transmission to a local site and to a remote site. *Id.* at 46–48.

Patent Owner’s arguments largely parallel the arguments that we address in detail, *supra* § II.E.3.b., in the context of combining teachings from Becker and Kenoyer ’423 for the “capturing” limitation of independent claim 1. And similar to those arguments above, the difficulty with Patent Owner’s contentions is that they are too focused on physical integration of the separate systems than on how the reference *teachings* would be combined (i.e., in this case, to obtain the desktop information used by Becker specifically from a PC video memory). Both parties rely on testimony by their respective experts to support their positions. *See* Ex. 2022 ¶¶ 108–113 (testimony by Dr. Rosing regarding deficiencies in effecting physical integration of the Becker and Kenoyer ’423 systems); Ex. 1020 ¶¶ 34–35, 38 (testimony by Dr. Bhattacharjee that a person of ordinary skill in the art “would readily understand how to adopt and combine the teachings of Kenoyer ’423 and Becker to convert and encode [desktop information captured from a video memory card of a PC] for transmission through a local ATM switch to a remote ATM switch, both of which serve as video communication terminals”).

But, as in the context of independent claim 1’s “capturing” limitation, we need not resolve the technical disagreements expressed by the parties’ experts because the ability to physically integrate the references’ systems is not the correct test for obviousness. Rather, “the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.” *Keller*, 642 F.2d at 425. With the correct test in mind, we find that Petitioner adequately identifies teachings in the combination of Becker and Kenoyer ’423 when considered at the level recited in the claims, and provides sufficient articulated reasoning, supported by rational

underpinning, to effect the proposed combination. We accordingly determine that Petitioner makes a persuasive showing.

We conclude that Petitioner shows, by a preponderance of the evidence, that claim 5 is unpatentable under 35 U.S.C. § 103(a) over Becker and Kenoyer '423.

6. Dependent Claim 6

Claim 6 depends from independent claim 1 and recites that “Step d further comprises: decoding the received coded bit stream and then outputting to a local output device.” Ex. 1001, 5:19–21. Referring to its analysis of the “receiving” limitation of independent claim 1 (which recites “receiving the coded bit stream by the local video communication terminal and transferring it to a remote video communication terminal through transmission channel after processing,” Ex. 1001, 5:1–4), Petitioner contends that a person of ordinary skill in the art “would understand that the point in Becker of sending a coded video bit stream to remote video communication terminal is so that it can be decoded in order to display the video signal on a remote video communication terminal.” Pet. 38.

Patent Owner disputes Petitioner’s showing as grounded in a “misunderstanding of this claim.” PO Resp. 48. Specifically, Patent Owner contends that “[c]laim 6 is directed to displaying information at a **local** device, and Petitioner’s discussion of claim 6 shows that it erroneously interprets the limitations of claim 6 as relating to a **remote** device.” *Id.* (citing Ex. 2022 ¶ 114). Notwithstanding the fact that the plain language of the claim refers to “outputting to a *local* output device” (emphasis added), Petitioner replies to Patent Owner’s contention by asserting that “a deeper

analysis of the claims actually proves the opposite of [Patent Owner's] conclusion.” Reply 18.

We are not persuaded that this is the case. Rather, we agree with Patent Owner that “[t]he Petition’s original argument for claim 6 made a plainly erroneous argument” by “citing to Becker’s ‘remote’ display (115L, 115R) rather than a ‘local’ output device.” Sur-reply 18.

The ’288 patent makes a clear distinction between “local” devices and “remote” devices. As merely one example, this is evident in the “receiving” limitation of underlying independent claim 1, which recites receiving the coded bit stream by the “*local* video communication terminal” and transferring to a “*remote* video communication terminal.” Ex. 1001, 5:1–4 (emphases added). And the meaning of “local” and “remote” devices is sufficiently clear from the drawings of the ’288 patent. For instance, Figure 4, reproduced above, has “local” structures at the top, separated by the identified “Network ” from “remote” structures at the bottom. *See id.* at 3:44–53.

Petitioner’s theory that “the local output device of Claim 6 is *local to the remote [video communication terminal]*” is unavailing. *See* Reply 19 (emphasis added). As Patent Owner points out, “if the Reply’s theory were adopted, then any output device located at a remote site would be simultaneously both a ‘remote output device’ (e.g., located at the remote site) and a ‘local output device’ (e.g., ‘local to the remote’ site).” Sur-reply 22; *see Akso Nobel Coatings, Inc. v. Dow Chemical Co.*, 811 F.3d 1334, 1339–40 (Fed. Cir. 2016) (interpretation that renders claim language superfluous is “disfavored”).

Because the portion of Becker identified by Petitioner relates to display on a *remote* video communication rather than to outputting to a *local* output device as required by the claim, Petitioner fails to make a persuasive showing. We accordingly conclude that Petitioner does not show, by a preponderance of the evidence, that claim 6 is unpatentable.

7. Dependent Claim 7

Claim 7 depends from claim 1 and recites that “Step d further comprises: simultaneously transferring the coded bit stream of the desktop information and that of a local image in a multiplex encoding mode.” Ex. 1001, 5:22–25. Petitioner addresses this limitation by identifying an embodiment taught by Becker in which “all signals” are “multiplexed together and sent over the same line.” Pet. 38–39; Ex. 1009 ¶ 227. Petitioner reasons that “[a]ll signals’ broadly refers to transmissions including high-definition signals corresponding to two computer monitors . . . or signals from cameras connected to video codecs located within the local ATM switch 60.” Pet. 39 (citing Ex. 1009 ¶¶ 199–200, 225). Outside of its arguments directed at underlying independent claim 1, Patent Owner does not dispute Petitioner’s reasoning, which we find persuasive and adequately supported by evidence.

We conclude that Petitioner shows, by a preponderance of the evidence, that claim 7 is unpatentable under 35 U.S.C. § 103(a) over Becker and Kenoyer ’423.

8. Independent Claim 9

Independent claim 9 is an apparatus claim that generally parallels the method recited in independent claim 1. *Compare* Ex. 1001, 4:58–5:4 *with id.* at 5:33–42.

a. Preamble

Petitioner addresses claim 9’s preamble of “[a]n apparatus for transferring desktop information of a PC to a video communication terminal” by noting that Figure 1 of Becker, reproduced above, “shows desktop information routed from the computer to a graphics format converter and encoder 50, sent over ATM 60 or the Internet to a decoder at a remote location where the signals are converted back and viewed on a monitor or computer.” Pet. 39–40 (citing Ex. 1009 ¶ 48). According to Petitioner, “[c]onverter and decoder 50 serves as at least part of an apparatus for transferring desktop information of a PC to a video communication terminal.” *Id.* at 40. Patent Owner does not dispute that Becker discloses such an apparatus, and we determine, to the extent the preamble is limiting, that Petitioner provides sufficient identification of such an apparatus.

b. “Background Processing-Device”

For the “background processing-device,” which is recited in claim 9 as performing “capturing,” “converting,” “encoding,” and “outputting” steps, Petitioner identifies Becker’s Graphics Format Converter and Encoder 50, shown in Figure 1 of Becker, reproduced above. Pet. 40 (citing Ex. 1004 ¶ 127). Dr. Bhattacharjee supports this identification, which is not disputed by Patent Owner, and which we find sufficient. *See* Ex. 1004 ¶ 127.

The “capturing” step requires “capturing desktop information of the PC.” Ex. 1001, 5:35–36. This limitation is notably broader than the corresponding “capturing” limitation of independent claim 1 in that it does not require that the capture occur “after receiving a triggering command.” *Compare id.* at 4:60–61 *with id.* at 5:35–36. Petitioner relies on the same teaching of Becker to capture graphics signals output from the computer in their raw format, which we find sufficient for the reasons discussed above in the context of independent claim 1. Pet. 41. Although Patent Owner disputes Petitioner’s showing for the “capturing” step, it does so only on the basis that Becker captures analog signals rather than the digital signals Patent Owner contends is required as a matter of claim construction. *See* PO Resp. 19–22. Because we reject Patent Owner’s proposed construction, this argument is not persuasive.

The “converting” step is identical to the “converting” step of independent claim 1, requiring “converting the captured desktop information from a PC format to a format of a local video communication terminal.” *Compare* Ex. 1001, 4:61–63 *with id.* at 5:36–38. Petitioner relies on the same teaching of Becker to convert analog RGBHV signals to serial high-definition television, which we find sufficient as discussed in the context of independent claim 1. Pet. 41.

The “encoding” step requires “encoding the converted format to a coded bit stream,” and does not include the further limitation of independent claim 1 that it be “in a mode ensured by the local video communication terminal.” *Compare* Ex. 1001, 4:64–65 *with id.* at 5:38–39. Petitioner relies on Becker’s teaching of encoding in conjunction with Becker’s graphics format converter and encoder 50 and MPEG compression device 52. Pet. 42

(citing Ex. 1009 ¶ 76). Because Becker also teaches that “the analog HDTV signal is sent into an A/D converter” that “converts the analog HDTV Signal into a Serial digital Stream, SDI, of data,” Petitioner further reasons that a person of skill in the art would understand that the encoded video signal would be output as a coded video bit stream, thereby also meeting both the “encoding” and “outputting” steps. *Id.* at 43 (citing Ex. 1009 ¶ 74; Ex. 1004 ¶¶ 113, 131). This reasoning is supported by Dr. Bhattacharjee’s testimony, and we also find it sufficient.

We accordingly determine that Petitioner makes a persuasive showing with respect to all aspects of the “background processing-device” recited in independent claim 9.

c. “Terminal Processing-Device”

For the “terminal processing-device,” which is recited in claim 9 as performing the step of “transferring the coded bit stream from the background processing-device to a remote video communication terminal,” Petitioner identifies Becker’s ATM switch 60. Pet. 43. Petitioner reasons that this structure performs the recited step because “Becker teaches that the ATM switch 60 (a terminal-processing device) receives the coded bit stream and transfers the signal to a remote ATM switch 160 (the video communication terminal) which then sends the signal to a remote decoder 152 so that the decoded signal can be displayed on a remote HDTV monitor 115 or similar device).” *Id.* at 43–44. Petitioner supports this reasoning with testimony by Dr. Bhattacharjee, and we find it sufficient. *See* Ex. 1004 ¶ 133.

d. Assessment

Petitioner makes a persuasive showing with respect to each limitation of independent claim 9. We conclude that Petitioner shows, by a preponderance of the evidence, that independent claim 9 is unpatentable under 35 U.S.C. § 103(a) over Becker and Kenoyer '423.

9. Dependent Claim 10

Claim 10 depends from claim 9 and recites specific structure for the “background processing-device,” each of which is required to perform one or more steps. Ex. 1001, 5:43–6:8. Petitioner address each of the structures and steps as follows.

First, claim 10 recites a “capture driver, sending out a triggering command.” *Id.* at 5:45. For this limitation, Petitioner identifies Kenoyer '423's teaching of a card installed on a computer, which displays the Show PC button discussed above in connection with the “capturing” limitation of independent claim 1. Pet. 46. Second, claim 10 recites a “capturing device, receiving the triggering command from the capture driver and capturing the desktop information, then outputting.” Ex. 1001, 5:46–48. Petitioner relies on Becker for these limitations in a manner similar to that discussed above for the “capturing” limitation of independent claim 1 by identifying Becker's capture of graphics signals. Pet. 45. Relying on its analysis of the “capturing” limitation of independent claim 1, Petitioner reasons that a person of skill in the art would combine the teachings of Becker and Kenoyer '423 to provide a form of control over the display of desktop information. *Id.* at 46–47. Although Patent Owner disputes the sufficiency of Petitioner's reasoning for effecting the combination, we determine that

Petitioner makes a persuasive showing for the reasons discussed at length above in connection with the “capturing” limitation of independent claim 1. *See* PO Resp. 35–45.

Third, claim 10 recites “an image converter, receiving the captured desktop information from the capturing device and converting into the format of the local video communication terminal, then outputting.” Ex. 1001, 6:1–4. Petitioner relies on Becker’s graphics format converter and encoder 50 to meet this limitation, in light of Becker’s express disclosure that “the analog RGBHV signals are converted to serial digital high-definition television, SDI-HDTV.” Pet. 47; Ex. 1009 ¶ 71. Patent Owner does not dispute this identification, which we find sufficient.

Fourth, claim 10 recites “a background encoder, encoding output signal from said image converter into the coded bit stream.” Ex. 1001, 6:5–6. For this limitation, Petitioner identifies Becker’s teaching that encoding is performed in conjunction the Becker’s graphics format converter and encoder 50 and MPEG compression device 52. Pet. 47 (citing Ex. 1009 ¶ 145). In addition, Petitioner observes that Becker’s MPEG compression device 52 receives the signal from Becker’s A/D converter 51 for “coding and compression,” thereby meeting the limitation. Patent Owner does not dispute these identifications, which we find sufficient.

Finally, claim 10 recites “a background bit stream sender, sending the coded bit stream to the terminal processing-device.” Ex. 1001, 6:7–8. Petitioner reasons that this limitation is also met because Becker’s A/D converter 51 “converts the analog HDTV Signal into a Serial digital Stream, SDI, of data,” with encoded HDTV signals sent from MPEG compression device 52 to ATM computer network switch 60, and then to ATM

switch 160. Pet. 48; Ex. 1009 ¶ 77. Petitioner supports its position, which Patent Owner does not dispute, with testimony by Dr. Bhattacharjee that a person of skill in the art would understand that such MPEG conversion would encode the information in a video bit stream format. Ex. 1004 ¶ 152.

Because Petitioner identifies each limitation in the combination of Becker and Kenoyer '423, and provides reasons for combining teachings of the references, supported by rational underpinning, we conclude that Petitioner shows, by a preponderance of the evidence, that claim 10 is unpatentable under 35 U.S.C. § 103(a) over Becker and Kenoyer '423.

10. Dependent Claim 12

Claim 12 depends from claim 9 and recites that “the terminal processing-device comprises a terminal bit stream transmitter that transfers the coded bit stream to the remote video communication terminal.” Ex. 1001, 6:14–17. As Petitioner observes, “[c]laim 12 largely corresponds to the last element of Claim 10,” such that Petitioner’s analysis of the “background bit stream sender” of claim 10 applies also to claim 12. Pet. 49. That is, Petitioner relies on Becker’s teaching of transmission by Becker’s ATM switch 60 to receiving ATM switch 160 at the remote location. *Id.* (citing Ex. 1009 ¶ 77). Patent Owner does not dispute Petitioner’s analysis outside of its arguments directed at underlying independent claim 9.

We conclude that Petitioner shows, by a preponderance of the evidence, that claim 12 is unpatentable under 35 U.S.C. § 103(a) over Becker and Kenoyer '423.

11. Dependent Claim 14

Claim 14 depends from claim 12 and recites that “the terminal processing-device further comprises a terminal encoder that encodes a local image and then outputs to the terminal bit stream transmitter.” Ex. 1001, 6:22–26. In addressing this claim, Petitioner points to Becker’s disclosure of cameras at the local site that are connected to video codecs contained within Becker’s ATM switch 60. Pet. 49–50 (citing Ex. 1009 ¶ 199). The video codecs compress the NTSC/PAL video from the cameras, with encoded information sent to the remote site via a video codec at the remote site, contained within ATM switch 160. Ex. 1009 ¶ 199. Patent Owner does not dispute Petitioner’s analysis outside of its arguments directed at underlying independent claim 9.

We conclude that Petitioner shows, by a preponderance of the evidence, that claim 14 is unpatentable under 35 U.S.C. § 103(a) over Becker and Kenoyer ’423.

E. Other Challenges

In the Institution Decision, we “strongly” found that the art relied on by Petitioner in the remaining grounds (each of which involves both Kenoyer and Clapp), as well as the corresponding arguments advanced by the Petition “are the same or substantially the same as those previously presented to the Office” and that “Petitioner has manifestly not identified a material error by the Office in its prior consideration of that art or arguments.” Dec. 29. With respect to claim 6 specifically, the Petition again appears improperly to conflate the recited “local” output device with a remote device. *See* Pet. 65. Regardless, Petitioner’s assertions with respect

to this claim, which essentially repeat those made by Dr. Bhattacharjee, Ex. 1004 ¶ 198, are at best conclusory, such that they are entitled to little weight. *See* 35 U.S.C. § 312(a)(3); 37 C.F.R. §§ 42.22(a)(2), 42.65(a), 42.104(b)(5). We accordingly expressly determine that Petitioner does not show, by a preponderance of the evidence, that claim 6 is unpatentable under its alternative grounds based on Kenoyer and Clapp, in combination with either Shaw or Video Compression.

Because we conclude that Petitioner shows, by a preponderance of the evidence, that all other challenged claims are unpatentable based on the combination of Becker and Kenoyer '423, we do not further reach Petitioner's alternative challenges. *Cf. In re Gleave*, 560 F.3d 1331, 1338 (Fed. Cir. 2009) (not reaching other grounds of unpatentability after affirming a ground based on anticipation); *Beloit Corp. v. Valmet Oy*, 742 F.2d 1421, 1423 (Fed. Cir. 1984) (explaining that an administrative agency is at liberty to reach a decision based on a dispositive issue because doing so “can not only save the parties, the [agency], and [the reviewing] court unnecessary cost and effort,” but can “greatly ease the burden on [an agency] faced with a . . . proceeding involving numerous complex issues and required by statute to reach its conclusion within rigid time limits”).

III. CONCLUSION

The table below summarizes our conclusions as to the challenged claims.

Claim(s)	35 U.S.C. §⁷	References	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 2, 5–7, 9, 10, 12, 14	103(a)	Becker, Kenoyer '423	1, 2, 5, 7, 9, 10, 12, 14	6
1, 2, 5–7, 9, 10, 12, 14	103(a)	Kenoyer, Clapp, Shaw		6
1, 2, 5–7, 9, 10, 12, 14	103(a)	Kenoyer, Clapp, Video Compression		6
Overall Outcome			1, 2, 5, 7, 9, 10, 12, 14	6

IV. ORDER

It is

ORDERED that, based on a preponderance of the evidence, claims 1, 2, 5, 7, 9, 10, 12, and 14 of U.S. Patent No. 7,609,288 B2 have been shown to be unpatentable;

FURTHER ORDERED that, based on a preponderance of the evidence, claim 6 of U.S. Patent No. 7,609,288 B2 has not been shown to be unpatentable; and

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

⁷ As indicated, *supra* § II.E., except for claim 6, we do not reach Petitioner's challenges based on Kenoyer, Clapp, and Shaw, nor Petitioner's challenges based on Kenoyer, Clapp, and Video Compression.

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