

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

PERSONALIZED MEDIA COMMUNICATIONS, LLC,
Patent Owner.

IPR2020-00725
Patent 9,674,560

Before GEORGIANNA W. BRADEN, JON M. JURGOVAN, and
STEVEN M. AMUNDSON, *Administrative Patent Judges*.

BRADEN, *Administrative Patent Judge*.

JUDGMENT

Final Written Decision

Determining Some Challenged Claims Unpatentable

35 U.S.C. § 318(a)

We have jurisdiction to hear this *inter partes* review under 35 U.S.C. § 6, and this Final Written Decision is issued pursuant to 35 U.S.C. § 318(a). For the reasons that follow, we determine Petitioner has shown by a preponderance of the evidence that claim 4 of U.S. Patent No. 9,674,560 B1 is unpatentable, but has failed to demonstrate claims 5–10 are unpatentable.

I. INTRODUCTION AND BACKGROUND

A. Procedural History

Google LLC (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 4–10 of U.S. Patent No. 9,674,560 (Ex. 1001, “the ’560 patent”). Paper 1 (“Pet.”). Personalized Media Communications, LLC (“Patent Owner”) filed a Preliminary Response. Paper 9 (“Prelim. Resp.”). Pursuant to 35 U.S.C. § 314(a), we instituted an *inter partes* review of all challenged claims on all proposed grounds of unpatentability. See Paper 13 (“Dec. to Inst.”), 58.

After institution of trial, Patent Owner filed a Patent Owner Response (Paper 15, “PO Resp.”), to which Petitioner filed a Reply (Paper 21, “Pet. Reply”). Patent Owner then filed a Sur-Reply (Paper 23, “PO Sur-Reply”).

An oral argument was held on June 30, 2021. A transcript of the oral argument is included in the record. Paper 29 (“Tr.”).

B. Real Parties in Interest

Petitioner identifies itself as the real party-in-interest pursuant to 37 C.F.R. § 42.8. Pet. 81. Petitioner denies that its parent companies XXVI Holdings Inc. and Alphabet Inc. are real parties-in-interest. *Id.* at n.1. Patent Owner identifies only itself as the real party-in-interest pursuant to 37 C.F.R. § 42.8. Paper 5 (Patent Owner’s Mandatory Notices), 1. There is no dispute regarding the identification of the real parties-in-interest.

C. Related Proceedings

Petitioner informs us of three district court proceedings based on the '560 patent, one of which is pending against Petitioner. Pet. 81. Patent Owner informs us of the same pending district court proceeding against Petitioner:

- *Personalized Media Communications, LLC v. Akamai Technologies, Inc.*, No. 2:19-cv-00089 (E.D. Tex. filed March 21, 2019);
- *Personalized Media Communications, LLC v. Google LLC*, No. 2:19-cv-00090 (E.D. Tex. filed March 21, 2019); and
- *Personalized Media Communications, LLC v. Netflix, Inc.*, No. 2:19-cv-00091 (E.D. Tex. filed March 21, 2019).

Paper 5, 1. Although the *Netflix* case was filed in the Eastern District of Texas, the case was transferred to the Southern District of New York. Ex. 2003, 16–17. Patent Owner also informs us of numerous administrative matters before the USPTO such as reissue applications, *ex parte* reexaminations, or *inter partes* review proceedings of patents that belong to the same patent family as the '560 patent. Paper 5, 1–3.

D. The '560 Patent

The '560 patent was filed on May 23, 1995, issued on June 6, 2017, and is titled “Signal Processing Apparatus and Methods.” Ex. 1001, codes (22), (45), (54). The '560 patent claims priority to Aug. 30, 1993 through a continuation application of related patent No. 7,856,650.

1. Written Description

The '560 patent describes a “unified system of programming communication” where the “system encompasses the prior art (television, radio, broadcast hardcopy, computer communications, etc.) and new user specific mass media.” Ex. 1001, code (57). The '560 patent states that

“[w]ithin the unified system, parallel processing computer systems, each having an input (e.g., 77) controlling a plurality of computers (e.g., 205), generate and output user information at receiver stations.” *Id.* According to the '560 patent, its system is capable of combining “user information selectively into prior art communications to exhibit personalized mass media programming at video monitors.” *Id.*

One embodiment disclosed in the '560 patent is Figure 1, which is reproduced below.

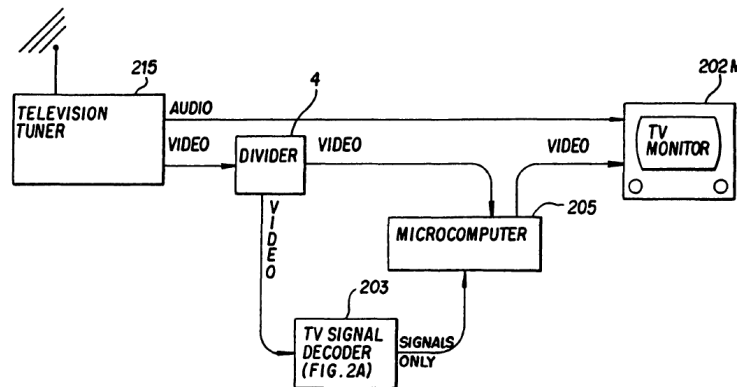


Figure 1 is a block diagram of a video/computer combined medium receiver station. Ex. 1001, 9:39–40. The '560 patent discloses that via a conventional antenna, the station receives a conventional television broadcast transmission at television tuner **215**. *Id.* at 10:52–54. The '560 patent teaches that TV signal decoder **203** has capacity for receiving a composite video transmission and detecting digitally embedded information. *Id.* at 10:63–66. According to the '560 patent, TV signal decoder **203** also can convert received information (by means of input protocol techniques) into digital signals that microcomputer **205** can receive and process and that can control the operation of microcomputer **205**. *Id.* at 11:1–5. The '560 patent teaches that microcomputer **205** is a conventional microcomputer system with disk drives

that is adapted to have capacity for receiving signals from decoder **203**. *Id.* at 11:6–9.

The '560 patent further discloses that a studio or television station that originates the broadcast transmission of programming is called the “program originating studio.” *Id.* at 11:43–44. According to the '560 patent, the program is transmitted from the program originating studio “by conventional television network feed transmission means” to a large number of geographically dispersed intermediate transmission stations that can retransmit the program to millions of subscriber stations where subscribers can then view the program. *Id.* at 11:45–50. The '560 patent teaches that the “network transmission means may include so-called landlines, microwave transmissions, a satellite transponder, or other means.” *Id.* at 11:50–52.

The '560 patent discloses that the programming origination station sends signals to an intermediate transmission station (e.g., a local television station) that receives, performs an action(s) based on a series of embedded control instructions in the televised signal, and retransmits to at least one subscriber station for viewing by the subscriber. *Id.* at 11:34–12:5. The instructions may allow for content to be embedded that is unique to the subscriber such as the recording of a television program for distribution at a later time, etc. *Id.* at 181:8–52.

One embodiment of an intermediate transition station disclosed in the '560 patent is Figure 6A, which is reproduced below.

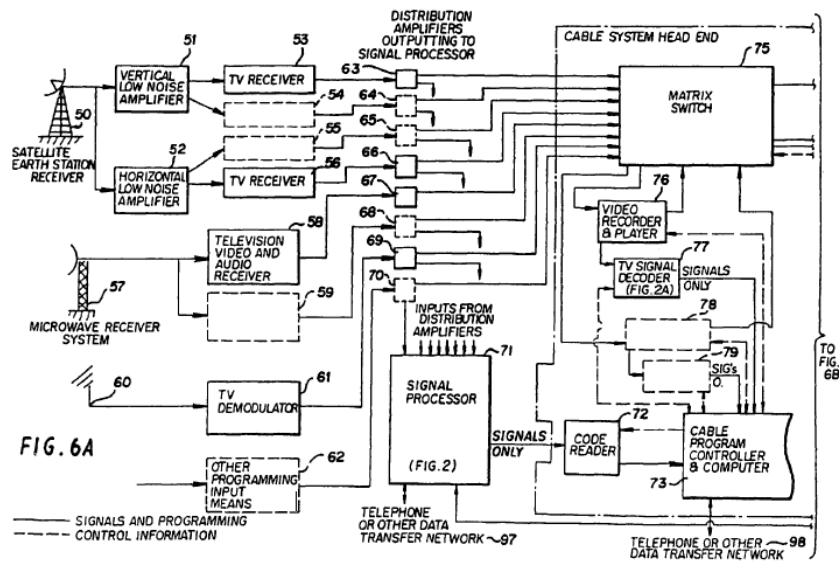


Figure 6A, above, is a “block diagram of one example of signal processing apparatus and methods at an intermediate transmission station, in this case a cable system headend.” Ex. 1001, 10:22–24. Figure 6A shows signal processor system 71 where “in field distribution system, 93, amplifier, 94, inputs programming transmissions to signal processor system, 71,” while “amplifier, 95, inputs programming transmissions to signal processor, 96, which permits both signal processor apparatus to monitor all programming transmitted by the cable television system head end station to field distribution system 93.” *Id.* at 176:26–35. The ’560 patent teaches that signal processor system 71 also has signal processor means to control signal processor system 71 to record meter-monitor information of said message information, and to transfer recorded information to external communications network 97. *Id.* at 170:51–55.

The ’560 patent specifically discloses that the signal processor is a “focal means for the controlling and monitoring subscriber station operations.” *Id.* at 15:32–36. According to the ’560 patent, it has the capacity for regulating communications consumption by selectively

decrypting or not decrypting encrypted programming and/or control signals and capacity for assembling and retaining meter records at each subscriber station that document the consumption of specific programming and information at said station. *Id.* at 15:38–44.

2. *Illustrative Claims*

As noted above, Petitioner challenges claims 4–10. Pet. 22–23. Independent claims 4 and 5 are illustrative of the challenged claims and are reproduced below:

4. A method of communicating image programming and computer programming to at least one subscriber in a network, said network including at least one programming origination station, at least one intermediate transmission station, and at least one subscriber station, said method comprising the steps of:

 originating an information transmission containing a control signal from said at least one programming origination station designating at least a portion of a programming presentation, which is effective to accomplish:

 effecting said at least one intermediate transmission station to control a computer to select a receiver and communicate said at least a portion of said programming presentation to a transmitter, and transmit to said at least one subscriber station a signal including said at least a portion of a programming presentation; and

 transmitting said information transmission containing said control signal from said at least one programming origination station to said at least one intermediate transmission station.

Ex. 1001, 291:6–26.

5. A method of communicating units of programming to a subscriber in a network, said network including at least one programming origination station, an intermediate transmission station, and at least one subscriber station, said intermediate transmission station transmitting said units of programming to said at least one subscriber station, said method comprising the steps of:

receiving an information transmission containing a control signal from said origination station at said intermediate transmission station;

detecting said control signal at said intermediate transmission station and passing said control signal to a computer; and

controlling said intermediate transmission station based on said control signal to:

select a portion of said units of programming based on operating records stored at said intermediate transmission station;

receive said units of programming at said intermediate transmission station; communicate said selected a portion of said-units of programming to a storage location;

store said selected a portion of said units of programming at said storage location; and

alter said operating records stored at said intermediate transmission station to indicate at least one of reception and storage of said selected a portion of units of programming; and subsequently transmitting said selected a portion of said-units of programming to said at least one subscriber station.

Id. at 291:26–292:18.

E. The Asserted Challenges to Patentability and Evidence of Record

Petitioner asserts the following challenges to patentability (see Pet. 21):

References/Basis	35 U.S.C. § ¹	Challenged Claim(s)
Torpey, ² Cox '645 ³	103(a)	4
Cox '645, Cox '404 ⁴	103(a)	5–10

Petitioner submits the Declaration of Stuart Lipoff, M.S., P.E. (“Mr. Lipoff”) in support of Petition for *Inter Partes* Review (Ex. 1003). Patent Owner submits the Declaration of Alfred C. Weaver, Ph.D. (“Dr. Weaver”) in support of Patent Owner’s Response (Ex. 2001). Dr. Weaver was deposed by Petitioner. *See* Ex. 1014 (Weaver Deposition).

F. Principles of Law Regarding Obviousness

A claim is unpatentable under 35 U.S.C. § 103(a) if “the differences between the subject matter sought to be patented 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

¹ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (September 16, 2011) (“AIA”), included revisions to 35 U.S.C. § 103 that became effective on March 16, 2013. Because the ’560 patent issued from an application filed before March 16, 2013, we apply the pre-AIA versions of the statutory bases for unpatentability.

² Torpey R. J., “*Television Automation—Design Concepts*,” J. SMPTE Vol. 81 (March 1972) (Ex. 1005, “Torpey”).

³ US 4,388,645, issued June 14, 1983 (Ex. 1006, “Cox ’645”).

⁴ US 4,393,404, issued July 12, 1983 (Ex. 1007, “Cox ’404”).

art; (3) the level of skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary considerations. *See Graham v. John Deere Co. of Kan. City*, 383 U.S. 1, 17–18 (1966). “While the sequence of these questions might be reordered in any particular case,” *KSR*, 550 U.S. at 407, the U.S. Court of Appeals for the Federal Circuit has “repeatedly emphasized that an obviousness inquiry requires examination of all four *Graham* factors and that an obviousness determination can be made only after consideration of each factor,” *Nike, Inc. v. Adidas AG*, 812 F.3d 1326, 1335 (Fed. Cir. 2016), *overruled on other grounds by Aqua Prods., Inc. v. Matal*, 872 F.3d 1290 (Fed. Cir. 2017) (en banc). When evaluating a combination of references, an obviousness analysis should address “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.

We analyze the obviousness issues according to these principles.

G. Burden of Proof

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review). Furthermore, the petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). “The

petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

Thus, to prevail in an *inter partes* review, Petitioner must explain how the proposed prior art or combinations of prior art would have rendered the challenged claims unpatentable. At this final stage, we determine whether a preponderance of the evidence of record shows that the challenged claims would have been obvious over the cited prior art. 35 U.S.C. § 316(e).

II. ANALYSIS

A. Claim Construction

Because Petitioner filed the Petition after November 13, 2018, we construe claim terms “using the same claim construction standard” that district courts use to construe claim terms in civil actions under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b) (2021); *see* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340 (Oct. 11, 2018) (amending 37 C.F.R. § 42.100(b) effective November 13, 2018). Under that standard, “[c]laim terms are given their ordinary and customary meaning, which is the meaning the term would have to a person of ordinary skill in the art at the time of the invention.” *Power Integrations, Inc. v. Fairchild Semiconductor Int’l, Inc.*, 904 F.3d 965, 971 (Fed. Cir. 2018) (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc)). “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy*

Spine, Inc. v. Medtronic Sofamor Danek, Inc., 469 F.3d 1005, 1006 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17). There is a “heavy presumption,” however, that a claim term carries its ordinary and customary meaning. *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (citation omitted).

1. “*intermediate transmission station*”

Petitioner states that it does not believe any terms need be construed to resolve the issues presented in this Petition. Pet. 21. Petitioner notes there were claim-construction issues in the related district court proceeding. *Id.* (citing Ex. 1009). Patent Owner presents claim constructions rendered in the related district court proceeding. PO Resp. 12–13. Patent Owner then requests that the Board adopt the district court’s construction of “intermediate transmission station” as a “station that can receive and retransmit broadcast transmissions.” *Id.* at 18. According to Patent Owner, with regards to “broadcast,” the district court stated that “intermediate transmission station” is “defined in the [’560 Patent] with this [point-to-multipoint over-the-air transmission] capability.” *Id.* (citing Ex. 1013, 28) (alteration in original).

Petitioner argues that “[t]he district court’s construction is simple: an intermediate transmission station is a ‘station that can receive and retransmit broadcast transmissions.’” Pet. Reply 1–2 (citing Ex. 1013, 31). That is, according to Petitioner, “the intermediate transmission station ‘can receive’ broadcast transmissions and ‘retransmit’ those received broadcast transmissions,” but “[h]ow the intermediate transmission station ‘retransmit[s]’ those received broadcast transmissions is unspecified.” *Id.* at 2. Petitioner further argues that “the district court considered a construction that incorporated language similar to the ‘point-to-multipoint’

language PMC now proposes, but the district court ultimately chose the language that the patentee used in its definition for ‘intermediate transmission station.’” *Id.* (citing Ex. 1013, 28, 31). Therefore, Petitioner concludes that the term does not need any further construction for this IPR, but should the Board decide to construe “intermediate transmission station,” then the “term should not be limited to retransmitting ‘over-the-air,’ as [Patent Owner] urges” because “[l]imiting the claimed ‘intermediate transmission station’ to transmitting “over-the-air” would contradict the ’560 patent’s clear disclosure otherwise.” *Id.* at 3.

As explained below, the parties dispute whether the prior art teaches an “intermediate transmission station.” See PO Resp. 18–19; Pet. Reply 1–3. To help resolve that dispute, we address the meaning of “intermediate transmission station.” See Ex. 1001, 7:16–22, 21:67–22:1, 44:28–31, 169:45–54; Ex. 1013, 28–31, 88; Ex. 2003, 5–15.

In a related civil action, a Texas district court construed “intermediate transmission station” to mean “station that can receive and retransmit broadcast transmissions.” See Ex. 1013, 28–31, 88. In another related civil action, a New York district court construed “intermediate transmission station” the same way. See Ex. 2003, 5–15.

The Texas district court determined that “[t]he term ‘intermediate transmission station’ is defined in” the ’560 patent. Ex. 1013, 29; see Ex. 2003, 3, 6. We agree that the ’560 patent defines the term “intermediate transmission station.” See Ex. 1001, 21:67–22:1. In particular, the patent states: “stations that receive and retransmit broadcast transmissions are called ‘intermediate transmission stations.’” Ex. 1001, 21:67–22:1; see Ex. 1013, 29; Ex. 2003, 3, 6. The ’560 patent further describes the “intermediate

transmission station” as retransmitting programming both “over-the-air (hereinafter, ‘broadcast’) or over hard-wire (hereinafter, ‘cablecast’).”

Ex. 1001, 7:16–22; *see also* 44:28–31 (“transmitting said transmissions via conventional broadcast or cablecast means”); 169:45–54.

Consistent with the ’560 patent’s definition and both district courts, we construe “intermediate transmission station” to mean “station that can receive and retransmit broadcast transmissions.” *See* Ex. 1001, 21:48–50; Ex. 1013, 28–31, 88; Ex. 2003, 5–15. This definition does not exclude a station that can receive and retransmit hard-wire or cablecast transmission. *See* Ex. 1001, 7:16–22; *see also id.* at 44:28–31 (“transmitting said transmissions via conventional broadcast or cablecast means”), 169:45–54.

2. Other Terms

Because the express construction of other claim terms are not needed to resolve any dispute in this proceeding at this time, we do not construe any of the other claim limitations. *See, e.g., Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1005, 1017 (Fed. Cir. 2017); *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”).

B. 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 person who is presumed to have known the relevant art at the time of the invention. *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). The level of ordinary skill in the art may be reflected by the prior art of record. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). Factors that may be considered in determining the level of ordinary skill in the art include, but are not limited to, (1) the educational level of the inventor; (2) the type of problems encountered in the art; (3) prior-art solutions to those problems; (4) the rapidity with which innovations are made; (5) the sophistication of the technology; and (6) the educational level of workers active in the field. *GPAC*, 57 F.3d at 1579; *Env'tl. Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696–97 (Fed. Cir. 1983). In a given case, one or more factors may predominate. *GPAC*, 57 F.3d at 1579. Generally, it is easier to establish obviousness under a higher level of ordinary skill in the art. *Innovation Toys, LLC v. MGA Entm't, Inc.*, 637 F.3d 1314, 1323 (Fed. Cir. 2011) (“A less sophisticated level of skill generally favors a determination of nonobviousness . . . while a higher level of skill favors the reverse.”).

Based on Mr. Lipoff’s testimony, Petitioner argues that a person having ordinary skill in the art at the time of the alleged invention would have had “a bachelor’s degree in electrical engineering or computer engineering (or equivalent), and at least three years of work experience in the field of television broadcasting systems, computer systems or television electronics, and/or multimedia or real-time video systems.” Pet. 20–21. Petitioner further argues that “[w]ith more education, for example, postgraduate degrees and/or study, less experience is needed to attain an

ordinary level of skill in the art. Similarly, more experience can substitute for formal education.” *Id.* at 21 (citing Ex. 1003 ¶ 33).

Patent Owner argues that a person having ordinary skill in the art at the time of the alleged invention would have had “at least a bachelor’s degree (or equivalent) in digital electronics, electrical engineering, computer engineering or a related technical degree, and two to five years of post-degree experience in a similar field.” PO Resp. 5. Dr. Weaver’s testimony supports Patent Owner’s position. *See* Ex. 2001 ¶ 35.

Based on our review of the ’560 patent, the types of problems and solutions described in the ’560 patent and cited prior art, and the testimony of both Mr. Lipoff (*see* Ex. 1003 ¶ 33) and Dr. Weaver (*see* Ex. 2001 ¶ 35), we find that a person of ordinary skill in the art at the time of the claimed invention would have had at least a bachelor’s degree in electrical engineering or computer engineering (or equivalent), and at least two years of work experience in the field of television broadcasting systems, computer systems or television electronics, and/or multimedia or real-time video systems. We agree with Petitioner’s contention that “[w]ith more education, for example, postgraduate degrees and/or study, less experience is needed to attain an ordinary level of skill in the art. Similarly, more experience can substitute for formal education.” We note that our analysis would be the same under either party’s proposed level of skill in the art.

C. Alleged Obviousness of Claim 4 of the ’560 Patent in View of Torpey and Cox ’645

Petitioner contends claim 4 of the ’560 patent is unpatentable under 35 U.S.C. § 103 as obvious in view of Torpey and Cox ’645. Pet. 21–40; Pet. Reply 3–12. Patent Owner disputes Petitioner’s contentions. PO Resp. 13–24; PO Sur-Reply 1–5. Below, we provide overviews of Torpey

and Cox '645, and then we consider the obviousness issues raised by the parties. For reasons that follow, we determine Petitioner has shown by a preponderance of the evidence that the challenged claim would have been obvious under 35 U.S.C. § 103 in view of Torpey and Cox '645.

1. *Overview of Torpey (Ex. 1005)*

Torpey is a journal article titled “Television Automation—Design Concepts.” Ex. 1005.⁵ Torpey describes a “computer-driven automation package” installed in television stations across the Canadian Broadcasting Corporation network. *Id.* at Abstract. Torpey’s television stations transmit television programs to subscribers in disparate areas. *Id.* at 176.

Torpey attempts to solve certain problems associated with automating the distribution of television programs by creating a fully computerized television station using a video/audio switcher. *Id.* at 175. Rather than requiring a person to be present to operate the switching of the television programs (*id.* at 1:3), Torpey teaches a system of automated control of the video/audio switcher that uses a computer to control the switching of television programs based on event information inputted through punch cards. *Id.* at 3:2–3. According to Torpey, an automated television system can be broken into basic subsystems: (1) the video/audio switcher with a conventional Manual Control Panel; and (2) the automated control system, which operates the switcher when there is no one to operate the Manual Control Panel. *Id.* at 176. Torpey states that “[t]he first item, the video/

⁵ Petitioner contends that Torpey is prior art under §§ 102(a),(b) and was publicly accessible prior to the earliest claimed priority date of the '560 patent, as evidenced by a declaration from Rachel J. Watters, librarian and Director of Wisconsin TechSearch at the University of Wisconsin-Madison. Pet. 2 (citing Ex. 1011).

audio switcher, is straightforward in design and layout.” *Id.* One element of Torpey’s video/audio switcher is shown in Figure 1, reproduced below:

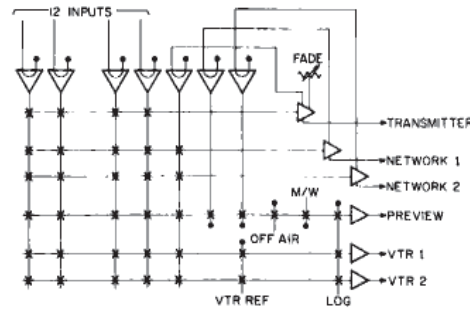


Fig. 1. CBC Moncton video diagram.

Figure 1, above, is a diagrammatic representation of the CBC Moncton video/audio switcher. Ex. 1005, 176. Another element of Torpey’s video/audio switcher is shown in Figure 2, reproduced below.

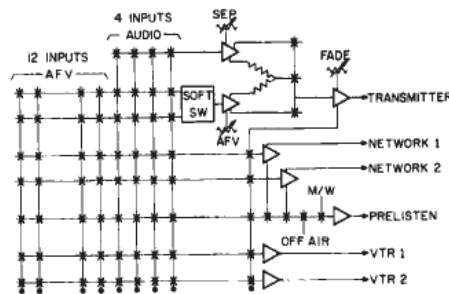


Fig. 2. CBC Moncton audio diagram.

Figure 2, above, is a diagrammatic representation of the CBC Moncton audio source. *Id.* Torpey discloses that, as shown in Figure 2, audio facilities closely follow the video, with the addition of certain separate audio-only sources and provision for mixing two audio signals for audio-over effects. *Id.*

Torpey then discloses that the second subsystem, the automated control, was designed and built independently of the video/audio switcher. *Id.* According to Torpey, “[b]oth the automation and the operator are capable of controlling the switcher in parallel with one another.” *Id.* One

embodiment of Torpey's automated control system is shown in Figure 3, reproduced below.

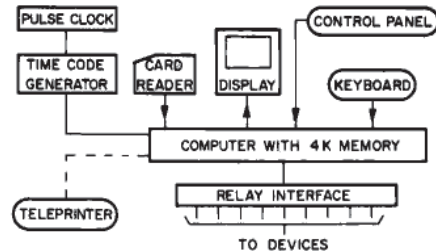


Fig. 3. Component parts of an automation system.

Figure 3, above, is a diagrammatic representation of the CBC Moncton automated control system. Ex. 1005, 176. According to Torpey, the component parts of the automated system include: (1) a small general-purpose digital computer; (2) clock and clock interface; (3) data input terminal(s): (a) punched card reader and (b) keyboard; (4) relay switching interface; (5) status display – alphanumeric video character generator; (6) input interface for manual controls from human operator, feedback from devices, etc.; and (7) software. *Id.* In Figure 3, the computer reads events (i.e., an “on air” occurrence) inputted through a punched card reader to control the switching of the video. *Id.* The computer stores up to 12 events ahead and switches the video/audio switcher according a software program that manages the events. *Id.*

Torpey further discloses ideas regarding design variations as well as future expansions of its system, including logging of events, network control, time sharing, and remote programing. *Id.* at 177–78. Regarding remote programming, Torpey specifically teaches that “[i]f a station is equipped with a computer that runs the switcher and if a string of these stations forms a network, then program scheduling and preparation of each station’s program

log can be performed at one central office, and then loaded into each individual computer via data lines.” *Id.* at 178.

2. Overview of Cox '645 (Ex. 1006)

Cox '645 is a U.S. Patent titled “Teletext Communication System with Timed Multipage Local Memory.” Ex. 1006, code (54). Cox '645 discloses a teletext communications system comprising a transmitter, e.g., an orbiting satellite, transmitting multiple pages of a teletext encoded data service at selected times of the day. *Id.* at code (57). Specifically, Cox '645 discloses that its “teletext decoder is adapted for acquiring and storing each transmitted teletext page at a page memory defined by said page memory address code and automatically rebroadcasts each of the stored pages for which the stored selected time interval coincides with the transmitted time of day code.” *Id.* Cox '645 discloses a system at a central station that receives teletext formatted data and automatically rebroadcasts the stored data to a plurality of remote receivers at selected times during the day. *Id.* at 8:5–10.

One embodiment of Cox '645's system is shown in Figure 1, reproduced below.

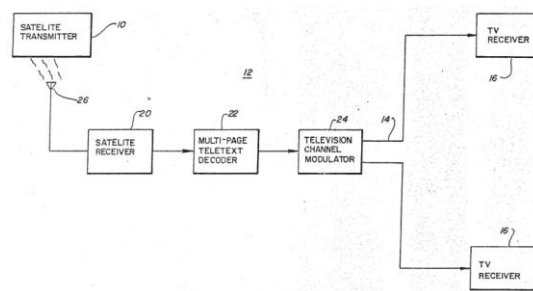


FIG. 1

Figure 1, above, is a block diagram illustrating a teletext communication system. Ex. 1006, 2:52–54. Cox '645 further discloses that the teletext communication system includes satellite transmitter 10 that transmits multiple channels of television signals to cable television head

end 12 (which includes satellite receiver 20, multi-page teletext decoder 22, and television channel modulator 24), for rebroadcast over cable 14 to a number of subscriber television receivers 16. *Id.* at 3:21–27, 43–59.

According to Cox '645, embedded in the vertical intervals of the television signals are control data and teletext pages. *Id.* at 3:29–34. The control data includes, for each teletext page, “first and second auxiliary data rows.” *Id.* at 3:34–35.

One embodiment of the second auxiliary row control data of Cox '645's system is shown in Figure 3, reproduced below.



FIG. 3

Figure 3, above, is a diagram illustrating the teletext data formatting scheduled used by Cox '645's teletext communication system. Ex. 1006, 2:55–57. As shown, in Figure 3, the second auxiliary row, “row 25,” includes a “time of day code” “specifying the time of day.” *Id.* at 4:47–51. Cox '645 states that control data found within the first and second auxiliary data rows are “normally not intended for teletext display.” *Id.* at 3:34–39.

Cox '645 also discloses the use of teletext decoder 22 that is adapted for acquiring the teletext encoded signals and is responsive to the control data for storing each programming guide page in a respective page memory. *Id.* at 3:51–54, Fig. 1. In addition, according to Cox '645, decoder 22 is responsive to the control data for automatically reading and decoding the stored programming guide pages during selected times of the day and coupling the decoded pages in a predetermined cyclical manner to the input of a television channel modulator 24. *Id.* at 3:54–59, Fig. 1.

page memory, thereby storing the time-on and time-off codes and the corresponding teletext page at the selected page memory. *Id.* at 5:34–45. Each teletext page is stored in this manner at a respective page memory. *Id.* at 5:46–51.

3. *Analysis of Torpey and Cox '645 as Applied to Challenged Independent Claim 4*

a. *Preamble*

Claim 4 recites “[a] method of communicating image programming and computer programming to at least one subscriber in a network, said network including at least one programming origination station, at least one intermediate transmission station, and at least one subscriber station, said method comprising the steps of.” Ex. 1001, 291:6–11.

Petitioner contends the preamble is a non-limiting statement of “purpose or intended use of the invention” but nonetheless argues that Torpey and Cox '645 teach the preamble. Pet. 27–28 (citing Ex. 1003 ¶¶ 102–09). To support its argument, Petitioner first relies on Torpey’s television programming as the “image programming” that is communicated. *Id.* at 28 (citing Ex. 1003 ¶ 104). Petitioner also relies on Cox '645’s description of control data as the communicated “computer programming.” *Id.* at 29 (citing Ex. 1007, Figs. 1–3, 3:31–4:4, 4:27–45, 5:4–24). Petitioner argues it would have been obvious to a person of ordinary skill in the art at the time of the invention to use the combined teachings of Torpey and Cox '645 to communicate “computer programming.” *Id.* Petitioner states that “while Cox '645 transmits teletext pages to the subscriber receivers as television signals (without including the control data), it would have been widely understood that, in other implementations of teletext, at least some of

this control data would reach the subscriber receivers.” *Id.* (citing Ex. 1007, Figs. 1–3, 3:31–4:4, 4:27–45, 5:4–24).

Alternatively, Petitioner argues that the proposed combination could be used to transmit “computer programming” in the form of software. *Id.* Petitioner relies on the testimony of Mr. Lipoff to support its position. *Id.* Mr. Lipoff testifies that

[i]t would have been widely understood and obvious to a [person of ordinary skill in the art] that software intended for subscriber stations could be inserted into the vertical interval of a television signal. One example was telesoftware, which provisioned teletext receivers with software by inserting it into the vertical interval of a television signal.

Ex. 1003 ¶ 104. Mr. Lipoff cites to two instances when such telesoftware was inserted into the vertical interval of television signals in order to transmit programming to a receiver. *Id.* (citing Ex. 1003, Ex. D, 557–58; Ex. E, 482–83, 486).

Petitioner further relies on Cox ’645’s satellite transmission (i.e., the “programming origination station”) to a location over-the-air to Torpey’s network television station (i.e., the “intermediate transmission station”). Pet. 30 (citing Ex. 1005, Abstract; Ex. 1009, 165; Ex. 1003 ¶¶ 106–07). According to Petitioner, Torpey’s network television station is between (intermediate) the satellite and subscriber receiver and transmits the television program. *Id.* at 30–31 (citing Ex. 1005, Abstract; Ex. 1009, 150; Ex. 1003 ¶¶ 108–09).

Patent Owner contends that the preamble is limiting because it “provides antecedent basis for, and recites, several claim limitations that appear in the rest of claim 4.” PO Resp. 14–17. Patent Owner relies on

Pitney Bowes, Inc. v. Hewlett-Packard Co., 182 F.3d 1298, 1305 (Fed. Cir. 1999), stating, “If the claim preamble, when read in the context of the entire claim, recites limitations of the claim, or, if the claim preamble is ‘necessary to give life, meaning, and vitality’ to the claim, then the claim preamble should be construed as if in the balance of the claim.” *Id.*

Patent Owner further argues that neither Torpey nor Cox ’645 disclose “[a] method of communicating image programming and computer programming to at least one subscriber in a network.” PO Resp. 15 (emphasis omitted, alteration in original). Rather, according to Patent Owner, “when read carefully, the Petition does not actually allege that either of the references discloses communicating ‘computer programming’ to a subscriber.” *Id.* Patent Owner states that the Petition merely argues that “it would have been obvious to a [person of ordinary skill in the art] to [have] use[d] the proposed combination to communicate ‘computer programming.’” *Id.* (citing Pet. 29). Patent Owner disagrees with the Petition, arguing that “[w]hen discussing the combination in earnest, the Petition itself does not allege that either reference discloses communication of ‘computer programming’ to a subscriber.” *Id.* Patent Owner further argues that neither Torpey’s “Program log” (transmitted from the Central Office to the Network Television Station) nor Cox ’645’s teletext “Control Data” (transmitted from the Satellite to the Head End) are received by the subscriber station (e.g., “Subscriber” in Torpey and “Subscriber Receiver” in Cox ’645). *Id.* at 15–17. Instead, according to Patent Owner, only the “television program” of Torpey and a standard NTSC television signal representative of the “Stored teletext page” of Cox ’645 are sent to the subscriber receiver. *Id.* at 17 (citing Ex. 1006, 2:5–14). Thus, Patent Owner concludes that by Petitioner’s

own arguments, no computer programming makes its way to the subscriber receiver. *Id.*

“Whether to treat a preamble term as a claim limitation is determined on the facts of each case in light of the claim as a whole and the invention described in the patent.” *Am. Med. Sys., Inc. v. Biolitec, Inc.*, 618 F.3d 1354, 1358 (Fed. Cir. 2010) (internal quotation marks omitted). “Absent clear reliance on the preamble in the prosecution history, or in situations where it is necessary to provide antecedent basis for the body of the claim, the preamble generally is not limiting.” *Symantec Corp. v. Computer Assocs. Int’l, Inc.*, 522 F.3d 1279, 1288 (Fed. Cir. 2008) (internal quotation marks and citation omitted). Additionally, preamble language that merely states the purpose or intended use of an invention generally is not treated as limiting the scope of a claim. *See Boehringer Ingelheim Vetmedica, Inc. v. Schering-Plough Corp.*, 320 F.3d 1339, 1345 (Fed. Cir. 2003); *Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997). Yet, when the limitations in the body of the claim rely upon or derive essential structure from the preamble, then the preamble acts as a necessary component of the claimed invention and is limiting. *See Eaton Corp. v. Rockwell Int’l Corp.*, 323 F.3d 1332, 1339 (Fed. Cir. 2003).

Our reviewing court has explained, however, that a “conclusion that some preamble language is limiting does not imply that other preamble language, or the entire preamble, is limiting.” *Cochlear Bone Anchored Sols. AB v. Oticon Med. AB*, 958 F.3d 1348, 1355 (Fed. Cir. 2020); *see TomTom, Inc. v. Adolph*, 790 F.3d 1315, 1322–23 (Fed. Cir. 2015) (holding the court erred in determining that it had to construe the entire preamble if it construed a portion of it), citing *Loctite Corp. v. Ultraseal Ltd.*, 781 F.2d 861, 868 (Fed. Cir. 1985), *overruled in part on other grounds by Nobelpharma AB v.*

Implant Innovations, Inc., 141 F.3d 1059, 1068 (Fed. Cir. 1998) (en banc in part). The Court in *Cochlear Bone Anchored* specifically held that even when a phrase in a preamble provides a necessary structure for a claim, that preamble structure does not necessarily convert the entire preamble into a limitation, particularly one that only states the intended use of the invention. 958 F.3d at 1355.

Based on the current record, we find at least part of the preamble limiting because (1) the claim limitations relating to “network,” “origination station,” “intermediate transmission station,” and subscriber station” rely on the preamble for antecedent basis, and (2) it recites “communicating image programming and computer programming to at least one subscriber,” which provides a limitation to the claim for communicating the same. Accordingly, we find these portions of the preamble recite essential structures of the communication method and are limiting. We need not reach a determination on whether the entirety of the preamble is limiting because we find the prior art teaches the preamble.

Specifically, we find Petitioner has shown by a preponderance of the evidence that the combination of Torpey and Cox ’645 teaches or suggests a

[a] method of communicating image programming and computer programming to at least one subscriber in a network, said network including at least one programming origination station, at least one intermediate transmission station, and at least one subscriber station, said method comprising the steps of.

We agree with Petitioner that “at least some of this control data would reach the subscriber receivers” or “[i]t would have been widely understood and obvious to a [person of ordinary skill in the art] that software intended for subscriber stations could be inserted into the vertical interval of a television

signal” (see Pet. 29), because Cox ’645 discloses control data and discloses that

teletext encoded data can be transmitted during the vertical intervals of any one of these signals. The teletext encoded data transmitted by the satellite may represent any desired information, including, for example, multiple pages of programming guide or the like identifying the content of the television programming signals being transmitted by the satellite.

Ex. 1006, 1:67–2:5. So we know a person of ordinary skill in the art would have understood that encoded data, such as a computer program or telesoftware, could have been sent via satellite to an intermediate transmission station (i.e., Torpey’s network television stations). We, thus, find Cox ’645 to indicate three things: (1) it transmits signals via satellite; (2) the head end facility corresponds to the intermediate transmission station (i.e., Torpey’s network television stations); and (3) encoded embedded control data is not relayed from Cox ’645’s head end facility in the vertical interval of television signals to the television receiver subscriber stations. See *id.* at 1:67–2:14, 3:34–39. Cox ’645 does not explicitly disclose the transmission of computer programming as required by the claims.

Petitioner then cites to Cox ’404 to support its position that although “Cox ’645 transmits teletext pages to the subscriber receivers as television signals (without including the control data), it would have been widely understood that, in other implementations of teletext, at least some of this control data would reach the subscriber receivers.” Pet. 29 (citing Ex. 1007, Figs. 1–3, 3:31–4:4, 4:27–45, 5:4–24); Tr. 8:12–9:3. According to Petitioner, if this control data is considered “computer programming,” then the proposed combination would communicate “computer programming.” Petitioner

alternatively suggests that the proposed combination could be used to transmit “computer programming” in the form of software. Petitioner concludes that “[i]t would have been widely understood and obvious to a POSA that software intended for subscriber stations could be inserted into the vertical interval of a television signal.” *Id.* Petitioner relies on the testimony of Mr. Lipoff to support its position. *Id.* at 28–29 (citing Ex. 1003 ¶ 104).

Regarding Petitioner’s argument, we credit the testimony of Mr. Lipoff delineating the transmission of telesoftware in early teletext systems. *See* Ex. 1003 (citing Ex. 1003, Ex. D, 557–58; Ex. E, 482–83, 486). Mr. Lipoff’s testimony and cited evidence demonstrate at least two instances at the time of the invention when telesoftware actually was inserted into the vertical interval of television signals in order to transmit programming instructions to a television subscriber receiver as required by the challenged claims. *See id.*

Patent Owner disputes Petitioner’s position arguing “Petitioner fails to explain, however, how the teachings of *Cox ’404* with its television receiver receiving certain control data fits into the *Torpey-Cox ’645* combination.” PO Sur-Reply 3–4 (citing Ex. 1006, 2:1–14). We do not agree with Patent Owner. Petitioner notes that *Cox ’404* discloses an invention from the same inventors as *Cox ’645* so one of ordinary skill in the art naturally would have considered the two references together. Pet. Reply 7.

Patent Owner also disputes Petitioner’s position arguing “the control data in the *Torpey-Cox ’645* combination does not reach the subscriber because *Cox ’645* converts the teletext into visual signals.” PO Sur-Reply 3–4 (citing Ex. 1006, 2:1–14). Again, we do not agree with Patent Owner because Petitioner demonstrates *Cox ’404* describes a “conventional television signal transmitter” that (1) transmits teletext control data to a

“television receiver including a conventional teletext decoder” and (2) is “adapted for transmitting a teletext signal in the vertical blanking interval of a broadcast television signal.” Pet. Reply 7. (citing Ex. 1007, 3:21–25 (describing Figure 1), 4:27–37) (emphasis omitted). Additionally, Petitioner persuasively explains that Cox ’404’s teletext decoder is a computer and it receives teletext control information “to do things, to cause something to happen, then, at the television receiver.” Tr. 9:16–10:17; *see also* Ex. 1007, 5:4–6 (“Teletext decoder 38 typically comprises a keyboard 42, a data acquisition circuit 44, a page memory 46, a time base circuit 48, and an RGB display generator 50.”). Thus, Cox ’404 contemplates transmitting control data to a subscriber’s receiver, contrary to Patent Owner’s argument.

Patent Owner further disputes that the combination of Cox ’645 and Torpey teaches or suggests an “intermediate transmission station” as required by the preamble and other claim limitations. PO Resp. 18–19. Patent Owner specifically argues there is no disclosure of “a satellite receiving and retransmitting broadcast transmissions in *Torpey*” and that disclosed cable head end in Cox ’645 is not capable of “retransmit[ting] broadcast transmissions.” *Id.* at 19.

Petitioner contends, however, that Torpey and Cox ’645 render an “intermediate transmission station” obvious. Pet. 30 (citing Ex. 1003 ¶ 108). Consistent with its proposed claim construction, Petitioner argues “*Torpey*’s network television station receives and retransmits transmissions of television programs sent over-the-air from one location, Cox ’645’s satellite, to many locations, *Torpey*’s network television stations (*Torpey* envisions multiple network television stations, Ex. 1005, Abstract.)” *Id.* at 30–31 (citing Ex. 1003 ¶ 109).

We agree with Petitioner and find that Torpey and Cox '645 teach or at least suggest an “intermediate transmission station” as we have construed the term. *See supra* Section II.A.1. Specifically, our construction does not limit the method by which a program is retransmitted. According to the '560 patent, cablecast retransmission may be used by an intermediate transmission station. Therefore, we find that Torpey's network television station is an intermediate transmission station because it would have been capable of receiving television programs sent over-the-air from a satellite (Cox '645 satellite transmitter 10) and then retransmitting transmissions to another location. Ex. 1005, 178, Figs. 1 and 2. Torpey specifically discloses:

[i]f a station is equipped with a computer that runs the switcher and if a string of these stations forms a network, then program scheduling and preparation of each station's program log can be performed at one central office, and then loaded into each individual computer via data lines. The list of future possibilities is long, and is limited only by the imagination and the requirements of the broadcaster.

See id. at 178. Additionally, we credit the testimony of Mr. Lipoff, who explains that in Petitioner's proposed combination, Torpey would retransmit a television program sent over-the-air from one location to many locations, which would be Torpey's network television stations. *See* Ex. 1003 ¶¶ 108–09.

Accordingly, after our review of the evidence of record, we determine Petitioner has shown by a preponderance of the evidence that the combination of Cox '645 and Torpey teaches or suggests the challenged claim preamble.

- b. originating an information transmission containing a control signal from said at least one programming origination station designating at least a portion of a programming presentation, which is effective to accomplish*

Claim 4 recites “originating an information transmission containing a control signal from said at least one programming origination station designating at least a portion of a programming presentation, which is effective to accomplish.” Ex. 1001, 291:17–22.

Petitioner contends that Torpey and Cox ’645 teach originating an information transmission containing a control signal (e.g., Torpey’s program log) from said at least one programming origination station (e.g., Cox ’645’s satellite) designating at least a portion of a programming presentation (e.g., Torpey’s television program). Pet. 31 (citing Ex. 1003 ¶¶ 110–15).

Petitioner argues that “the satellite originates a transmission of the program log to the network television station.” *Id.* (citing Ex. 1003 ¶ 111). According to Petitioner, Torpey describes the network television station receiving the program log “via data lines” from a central office, and a person of ordinary skill in the art “would have been motivated, based on *Cox ’645*, to modify *Torpey* to send the program over-the air from the satellite, just as the satellite in *Cox ’645* sends the control signals associated with the teletext pages.” *Id.* (citing Ex. 1003 ¶ 111).

Petitioner further contends the program log, which lists a number of television programs to be aired, designates a television program. Pet. 32 (citing Ex. 1005, 176; Ex. 1003 ¶ 112). Therefore, Petitioner concludes that “[b]ecause *Torpey* and *Cox ’645* teach originating a transmission of a program log from a satellite, and that the program log designates a television

program, *Torpey* and *Cox '645* thus teach” the challenged limitation. *Id.* at 33.

Patent Owner does not dispute Petitioner’s contentions. *See generally* PO Resp. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

Based on the entirety of the trial record before us, we agree with Petitioner and determine a person of ordinary skill in the art would have been motivated, based on the teachings of *Cox '645*, to modify *Torpey* to send the program over the air from the satellite and that the program log does act as a signal designating a least a portion of a programming presentation to be played as recited by the challenged claim.

- c. effecting said at least one intermediate transmission station to control a computer to select a receiver and communicate said at least a portion of said programming presentation to a transmitter, and transmit to said at least one subscriber station a signal including said at least a portion of a programming presentation*

Claim 4 recites “effecting said at least one intermediate transmission station to control a computer to select a receiver and communicate said at least a portion of said programming presentation to a transmitter, and transmit to said at least one subscriber station a signal including said at least a portion of a programming presentation.” Ex. 1001, 291:17–22.

Petitioner contends that *Torpey* discloses this limitation because *Torpey*’s network television station “controls the automated control system, based on the program log, to select an input through which a television program is received and communicate the television program to a transmitter.” Pet. 34 (citing Ex. 1003 ¶ 117). Petitioner argues that *Torpey*’s television station includes a “video/audio switcher” and an “automated

control system which operates the switcher.” *Id.* at 34–35 (citing Ex. 1005, 176). Citing to Torpey’s Figure 1, Petitioner further argues that the video switcher at the television station is configured to switch between a number of inputs to broadcast a received television signal on a transmitter. *Id.* at 35 (citing Ex. 1005, Fig. 4; Ex. 1003 ¶ 117). According to Petitioner’s proposed combination, the network television station receives the program log, which designates a television program to be aired, the video source of the television program, and the time at which the television program is to be aired. *Id.* (citing Ex. 1005, 176, Fig. 4; Ex. 1003 ¶ 118).

Petitioner then contends that “[b]ased on the program log, an automated control system at the network television station controls the switcher to air the designated television program at the designated time.” *Id.* at 36 (citing Ex. 1005, 176, Fig. 4; Ex. 1003 ¶ 119). Petitioner argues that “[t]o air the television program, the automated control system selects the designated video source—i.e., the input through which the television program is received—and transmits the designated television program on a transmitter.” *Id.* at 36–37 (citing Ex. 1005, 176; Ex. 1003 ¶ 120). Therefore, Petitioner concludes “[b]ecause *Torpey* and *Cox ’645* thus teach that, based on the program log, the network television station controls the automated control system to select an input and communicate the television program to the transmitter,” the combined references teach the challenged limitation. Pet. 37.

Patent Owner, however, disputes Petitioner’s contention that Torpey’s selection of an input at the network television station is the same as selecting a receiver. PO Resp. 20–23. Patent Owner argues that Torpey’s “video/audio switcher” merely facilitates connecting video/audio inputs to

outputs but it does not select a receiver and subsequently coordinate the desired input-output connection to the selected output. *Id.* at 22–23.

According to Patent Owner, Torpey is distinguishable from the challenged claim because the '560 patent states that its “control processors (71) and computers (73) [] *selectively* automate connection and operation of receivers (53), recorder/players (76), computers (73), generators (82), strippers (81)” *Id.* at 22 (citing Ex. 1001, Abstract) (alterations in original). Patent Owner then argues that “[r]eceiver 53 is specifically selected, tuned, and its output used, when the head end has a plurality of receivers 53–62 shown in Fig. 6A. *Torpey* is silent as to any ability to select a receiver. *Torpey* merely receives all received signals and uses the matrix to select a signal to ‘TAKE.’” *Id.* at 22–23 (citing Ex. 1001, 197:14–16).

As to Cox '645, Patent Owner points to a prior Board decision (1) holding held that Cox '645 does not disclose “select[ing] a receiver” and (2) reversing a rejection of claim 4 (then pending claim 65) based on Cox '645:

Claim [4] recites two distinct phrases: “transmit to said at least one subscriber station” and “select a receiver.” In context, reciting “*select* a receiver” (emphasis added) and “transmit to said at least one subscriber station” implies the selection of a single receiver instead of, as the Examiner reasons, selecting a set of receivers each located “at least one subscriber station.” Furthermore, Cox does not specify clearly whether or not the decoder selects subscriber receivers at the cited passages, contrary to the Examiner’s finding. See Cox 3:54–62; Ans. 11–12.

PO Resp. 23 (citing Ex. 1002, 96–97).

We agree with Patent Owner that the Board previously addressed the application claim that eventually issued as claim 4. See Ex. 1002, 96.

Additionally, we agree the Board determined that the limitations recited in the claim require the selection of a single receiver instead of set of receivers. *Id.* at 96–97. We do not agree, however, that the Board’s holding or the claim language itself requires the selected receiver be located at the end user’s subscriber station.

Claim 4 recites “effecting said at least one intermediate transmission station to control a computer to select a receiver” which requires the intermediate transmission station to control a computer.

Ex. 1001, 291:17–18. Immediately following, the claim then recites “and communicate said at least a portion of said programming presentation to a transmitter” indicating that the intermediate transmission station communicates the programming presentation to a transmitter. *Id.* at 291:18–20. The claim next recites “and transmit to said at least one subscriber station a signal.” *Id.* at 291:20–21. The separation of the clauses reciting “receiver” and “at least one subscriber station” appears to leave open the location of the receiver.

The specification of the ’560 patent supports a reading that the receiver may be located at the intermediate transmission station. Specifically, the ’560 patent discloses that computer 73 (*see* Fig. 6A) located at an intermediate transmission station is caused to received information from a particular transmission by having satellite earth station receiver 50 receive a signal that goes through a low noise amplifier 51, 52, which then causes TV receiver 53 to tune to a particular satellite transmission. Ex. 1001, 197:4–16, Fig. 6A. This, in turn, causes switch 75 to output information of a transmission to cable channel modulator 83, 87, or 91. *Id.* at 197:15–18. TV receiver stations 53–56 are located at an intermediate transmission station.

Id. at 169:55–63. Based on this disclosure, we understand the receiver of claim 4 may be located at an intermediate transmission station.

Additionally, based on Torpey’s disclosure, we agree with Petitioner that Torpey’s automated control system selects a designated video source—i.e., the input through which the television program is received—and transmits the designated television program on a transmitter. *See* Pet. 36–37. Specifically, we find that Torpey’s input functions as a single selected receiver (located at an intermediate transmission station) of a signal that is then transmitted to a subscriber station. *See id.* Therefore, we conclude Torpey’s input is a receiver within the context of the ’560 patent claims.

Accordingly, after our review of the evidence of record, we determine Petitioner has shown by a preponderance of the evidence that the combination of Cox ’645 and Torpey teaches or suggests the challenged claim limitation.

d. transmitting said information transmission containing said control signal from said at least one programming origination station to said at least one intermediate transmission station.

Claim 4 recites “transmitting said information transmission containing said control signal from said at least one programming origination station to said at least one intermediate transmission station.” Ex. 1001, 291:23–26.

Petitioner contends that Torpey and Cox ’645 teach transmitting said information transmission containing said control signal (e.g., Torpey’s program log) from said at least one programming origination station (e.g., Cox ’645’s satellite) to said at least one intermediate transmission station (e.g., Torpey’s network television station). Pet. 38 (citing Ex. 1003 ¶¶ 125–28). Petitioner argues that the satellite originates a transmission of the program log to the network television station. *Id.* (citing Ex. 1003

¶¶ 126–27). According to Petitioner, although Torpey describes the network television station receiving the program log “via data lines” from a central office, a person of ordinary skill in the art would have had reason, based on Cox ’645, to modify Torpey’s network to send both the program log and the television programming over the air from a satellite, just as the satellite in Cox ’645 sends the control signals and the teletext pages over the air. *Id.* at 39 (citing Ex. 1003 ¶¶ 126–27). Because Torpey and Cox ’645 teach transmitting the program log from the satellite to the network television station, Petitioner concludes that Torpey and Cox ’645 teach the required “transmitting said information transmission containing said control signal from said at least one programming origination station to said at least one intermediate transmission station.” *Id.* at 39–40.

Patent Owner disputes Petitioner’s contentions and argues Torpey’s transmission of program logs from a “central office” via “data lines” does not meet the claim limitation. PO Resp. 24 (citing Ex. 1005, 178). According to Patent Owner, a central office is not a programming origination station and it cannot “originate the transmission of image programming as the programming origination station of the ’560 Patent would.” *Id.* (citing Ex. 1001, 11:42–44 (“a studio or station that originates the broadcast transmission of programming is called the ‘program originating studio.’”)). Patent Owner argues that Torpey is silent as to the control instructions being transmitted from a programming origination station. *Id.* Patent Owner further argues that Cox ’645 does not make up for Torpey’s failure. *Id.*

We do not agree with Patent Owner’s position because we do not understand Petitioner’s arguments to be based on Torpey relaying its program logs from a “central office” via “data lines.” Rather, we understand

Petitioner's arguments to be that Torpey's network would have sent both the program log and the television programming over the air from a satellite, just as the satellite in Cox '645 sends the control signals and the teletext pages over the air. See Pet. 39 (citing Ex. 1003 ¶¶ 126–27). Therefore, we find that Torpey's program logs qualify as a control signal and would have had reason to send it via Cox '645's satellite.

Accordingly, after our review of the evidence of record, we determine Petitioner has shown by a preponderance of the evidence that the combination of Cox '645 and Torpey teaches or suggests the challenged claim limitation.

e. Reasons to Combine Torpey and Cox '645

Petitioner contends that a person of ordinary skill in the art at the time of the invention would have had reason to combine the teachings of Torpey and Cox '645. Pet. 23. Petitioner specifically argues that while Torpey describes the network television station receiving the program log “via data lines” from a central office, a person of ordinary skill in the art “would have been motivated, based on *Cox '645*, to modify *Torpey's* network to send the program log over-the-air in the same manner as the television programs, just as the satellite in *Cox '645* sends the control data over-the-air in the same manner as the teletext pages.” *Id.* (citing Ex. 1003 ¶¶ 95–96). According to Petitioner, a person of ordinary skill in the art “would have been motivated to send both the program log and the television programs over-the-air from a satellite, like the control data and teletext pages in *Cox '645*.” *Id.* Petitioner notes that, for example, “the program log could be embedded in a vertical interval of television signals sent by the satellite, just as *Cox '645's* control data is embedded in a vertical interval of the television signals sent by the

satellite.” *Id.* at 24 (citing Ex. 1003 ¶¶ 95–96). Petitioner argues a person of ordinary skill in the art “would have understood that transmitting control signals over-the-air like the television programs is efficient and effective.” *Id.* (citing Ex. 1003 ¶ 97). Petitioner further argues that it is efficient because (1) it makes use of an existing channel of communication to the network television station, removing the need for the data line to the network television station and simplifying infrastructure, and (2) it removes a possible point of failure in Torpey’s system. *Id.* (citing Ex. 1003 ¶ 97).

Patent Owner does not address whether a person of ordinary skill in the art would not have attempted to combine the teachings of Torpey with those of Cox ’645. *See generally* PO Resp. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

We have considered all arguments and supporting evidence regarding the rationale for combining the teachings of Torpey with Cox ’645, and find Petitioner articulates a reasoning with a rational underpinning that a person of ordinary skill in the art would have combined the teachings from the cited prior art to arrive at the invention recited in the challenged claims. *KSR*, 550 U.S. at 418. A motivation to combine may be found “explicitly or implicitly in market forces; design incentives; the ‘interrelated teachings of multiple patents’; ‘any need or problem known in the field of endeavor at the time of invention and addressed by the patent’; and the background knowledge, creativity, and common sense of the person of ordinary skill.” *ZUP, LLC v. Nash Mfg., Inc.*, 896 F.3d 1365, 1371 (Fed. Cir. 2018) (quoting *Plantronics, Inc. v. Aliph, Inc.*, 724 F.3d 1343, 1354 (Fed. Cir. 2013)).

Based on the evidence of record, Petitioner relies on Cox '645 to provide a more explicit teaching regarding data that is embedded in the vertical interval of television signals and for sending signals over a satellite in the same manner TV signals are relayed. See Ex. 1003 ¶¶ 95–96. Given Cox '645's express teaching regarding sending control data over the air in the same manner as the teletext pages (*see id.*), we agree with Petitioner that a person of ordinary skill would have had reason to turn to Cox '645's teachings for use with Torpey's automated system and would have had a reasonable expectation of success in using the systems together. See Ex. 1003 ¶¶ 94–98; *Procter & Gamble Co. v. Teva Pharm. USA, Inc.*, 566 F.3d 989, 994 (Fed. Cir. 2009) (*quoting Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348 (Fed. Cir. 2007)).

f. Summary

Based on the foregoing, we conclude Petitioner has demonstrated by a preponderance of the evidence that challenged independent claim 4 would have been obvious under 35 U.S.C. § 103 in view of the combined teachings of Torpey and Cox '645.

D. Analysis of Cox '645 and Cox '404 as Applied to Challenged Claims 5–10

Petitioner contends independent claim 5 and dependent claims 6–10 of the '560 patent are unpatentable under 35 U.S.C. § 103 as being obvious in view of Cox '645 and Cox '404 and provides specific arguments for each challenged claim. Pet. 21, 40–77 (citing Ex. 1003 ¶¶ 129–210); Reply 12–27. Patent Owner disputes Petitioner's contentions. PO Resp. 25–38; PO Sur-Reply 6–26. For reasons that follow, we determine Petitioner has failed to show by a preponderance of the evidence that

challenged claims 5–10 would have been obvious under 35 U.S.C. § 103 in view of Cox '645 and Cox '404.

1. Overview of Cox '645 (Ex. 1006)

See supra, Section II.C.2.

2. Overview of Cox '404 (Ex. 1007)

Cox '404 is a U.S. Patent titled “Special Services Teletext Communications Systems,” and issued on July 12, 1983. Ex. 1007, codes (45), (54). Cox '404 is directed to “[a] teletext communications system includ[ing] a transmitter cyclically transmitting a plurality of conventional teletext encoded data rows together with one or more teletext encoded special services data rows.” *Id.* at code (57). One embodiment of Cox '404 is reproduced below.

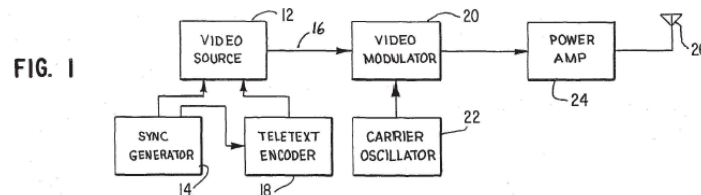


Figure 1, above, is a block diagram illustrating the video portion of a television signal transmitter including a teletext encoder. *Id.* at 2:52–54. Cox '404 discloses that “a conventional television signal transmitter . . . transmit[s] a teletext signal in the vertical blanking interval of a broadcast television signal.” *Id.* at 3:21–25. Cox '404 further discloses that video signal source 12 also receives an input from teletext encoder 18, which develops an appropriately bandlimited digitally encoded serial data signal and inserts this encoded signal in one or more unused horizontal lines of the vertical blanking interval of the composite video signal developed on conductor 16. *Id.* at 3:31–37.

Cox '404 further describes how a teletext page is stored in a page memory at a decoder. *Id.* at 5:44–51, 6:4–30. In another embodiment of Cox '404, a decoder is disclosed and a figure of such decoder is reproduced below:

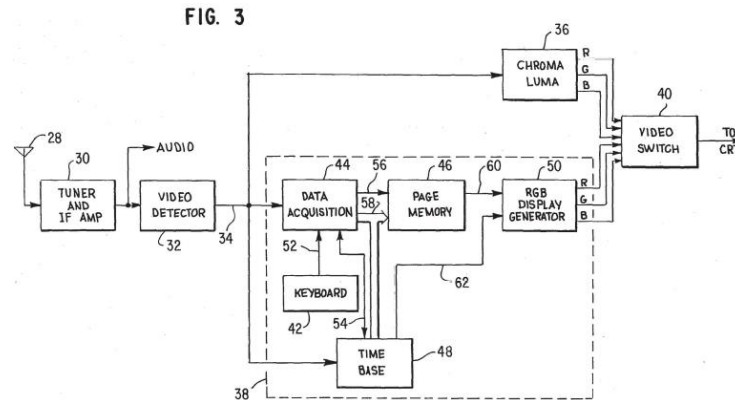


Figure 3, above, is a block diagram illustrating pertinent portions of a television receiver equipped with a conventional teletext decoder.

Ex. 1007, 2:57–59. Cox '404 teaches that when the decoder receives a teletext page, a data acquisition circuit couples the teletext page to a page memory for storage. *Id.* at 5:44–51. According to Cox '404, each teletext page includes twenty-four rows of “character bytes,” and each row is identified by a row address code, as shown in Figure 2. *Id.* at 6:14–17. Cox '404 notes that the page memory “contains sufficient memory capacity to store one complete page of acquired teletext data.” *Id.* at 6:4–5. In particular, Cox '404 discloses that the page memory typically includes “a 24 row by 40 column matrix of individually addressable 8 bit memory locations,” and each character byte of the teletext page is “written into a corresponding memory location.” *Id.* at 6:6–12.

One embodiment of the format for teletext encoded data is shown in Figure 2, reproduced below.

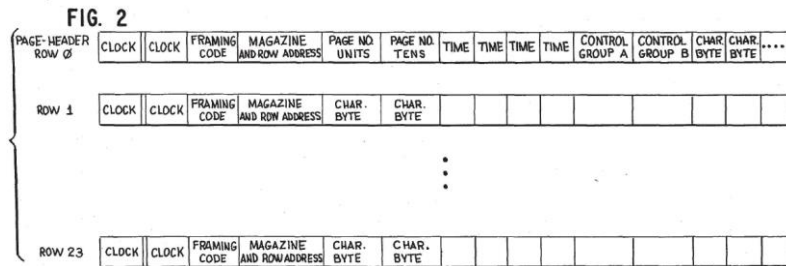


Figure 2, above, is a chart illustrating the British teletext signal format. Ex. 1007, 2:55–56. Cox ’404 teaches that storing a teletext page into a memory location requires a row address code and a column address code. *Id.* at 6:6–16. According to Cox ’404, the column address code is “internally generated” and “incremented in response to each character Byte of the acquired data row” of the teletext page. *Id.* at 6:15–17. “In this manner, page memory 46 is loaded for storing an entire page of teletext data.” *Id.* at 6:23–25.

3. *Analysis of Cox '404 and Cox '645 as Applied to Challenged Independent Claim 5*

a. Preamble

Claim 5 recites “[a] method of communicating units of programming to a subscriber in a network, said network including at least one programming origination station, an intermediate transmission station, and at least one subscriber station, said intermediate transmission station transmitting said units of programming to said at least one subscriber station, said method comprising the steps of.” Ex. 1001, 291:27–33.

Petitioner contends that Cox '645 and Cox '404 together teach communicating a teletext page to a subscriber receiver in a network that includes a satellite, a head end, and the subscriber receiver, and the head end transmitting the teletext page to the subscriber receiver. Pet. 48. Therefore, Petitioner concludes that Cox '645 and Cox '404 teach the preamble. *Id.*

Patent Owner does not dispute Petitioner's contentions. *See generally* PO Resp. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378. Based on the current record, and for the reasons Petitioner states, we find that Petitioner has shown that Cox '645 and Cox '404 together teach the preamble to independent claim 5 regardless of whether the preamble is limiting.

b. receiving an information transmission containing a control signal from said origination station at said intermediate transmission station

Claim 5 recites "receiving an information transmission containing a control signal from said origination station at said intermediate transmission station." Ex. 1001, 291:34–36.

Petitioner contends that Cox '645 teaches this limitation by disclosing that the cable network head end receives control data (i.e., a control signal) from the satellite that includes, for each teletext page, "first and second auxiliary data rows." Pet. 51 (citing Ex. 1006, 3:34–35). Petitioner argues that the first auxiliary data row, "row 24," includes a "memory page address byte," "time-on and time-off codes," a "magazine code," and a "page number code." *Id.* (citing Ex. 1006, Fig. 2, 4:3–7, 4:23–25). Petitioner then argues that the second auxiliary row, "row 25," includes a "time of day code," "specifying the time of day." *Id.* (citing Ex. 1006, Fig. 3, 4:47–51). According to Petitioner, "[b]oth rows 24 and 25 also include a "magazine code" and "page number code" for the teletext page. *Id.* at 51–52 (citing Ex. 1006, 4:3–7).

Patent Owner does not dispute Petitioner's contentions. *See generally* PO Resp. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

Based on the entirety of the trial record before us, we find that Petitioner has shown that the first and second auxiliary data rows disclosed in Cox '645 are received at the cable network head end from the satellite, which teaches “receiving an information transmission containing a control signal from an origination station at an intermediate transmission station” as recited by the challenged claim.

c. detecting said control signal at said intermediate transmission station and passing said control signal to a computer

Claim 5 recites “detecting said control signal at said intermediate transmission station and passing said control signal to a computer.”

Ex. 1001, 291:37–39.

Petitioner contends that Cox '645 teaches this limitation because satellite receiver 20 at the head end detects the control data from satellite transmitter 10 and passes it to decoder 22 (i.e., a computer) at the head end. Pet. 53 (citing Ex. 1006, 5:6–10; Ex. 1003 ¶¶ 151–52). According to Petitioner, “[f]or each teletext page, a data acquisition circuit at the decoder acquires row 24, which includes the memory page address byte, time-on and time-off codes, and magazine and page number codes for the teletext page.” *Id.* (citing Ex. 1006, 4:23–25, 5:18–25). Petitioner notes that “[t]he time of day code is stored in a row 25 register at the decoder.” *Id.* (citing Ex. 1006, 5:55–56). Thus, Petitioner concludes that “[b]ecause Cox '645 and Cox '404 thus teach detecting the control data at the satellite receiver at the head end and passing the control data to the decoder,” they teach the claim limitation. *Id.*

Patent Owner does not dispute Petitioner's contentions. *See generally* PO Resp. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

Based on the entirety of the trial record before us, we find that Petitioner has shown that the first and second auxiliary data rows disclosed in Cox '645 are detected at the cable network head end and passed to a computer, such as decoder 22, as required by the challenged claim.

d. controlling said intermediate transmission station based on said control signal to: select a portion of said units of programming based on operating records stored at said intermediate transmission station

Claim 5 recites "controlling said intermediate transmission station based on said control signal to: select a portion of said units of programming based on operating records stored at said intermediate transmission station." Ex. 1001, 292:1–5.

Petitioner contends that Cox '645 and Cox '404 teach controlling Cox '645's head end (an intermediate station) based on control data to select character bytes of Cox '645's teletext page based on Cox '404's column address code and the magazine and page number codes of Cox '645 and Cox '404. Pet. 54 (citing Ex. 1003 ¶ 155). Specifically, Petitioner contends that the character bytes of Cox '645's teletext page are selected based on Cox '404's column address code and the magazine and page number codes (i.e., operating records) disclosed in Cox '645 and Cox '404. *Id.* Petitioner relies on the testimony of Mr. Lipoff to explain "operating records." *Id.* at 53. Mr. Lipoff testifies that the "Cox '404's column address code and the magazine and page number codes of Cox '645 and Cox '404" are the operating records at issue. Ex. 1003 ¶¶ 154, 175.

Patent Owner does not dispute Petitioner's contentions. *See generally* PO Resp. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

Based on the entirety of the trial record before us, we find that Petitioner has shown that selecting character bytes of teletext pages based on at least an internally generated column address as disclosed in Cox '404 and further based on information in the control data as disclosed in Cox '645 meets the limitation recited by the challenged claim.

e. receive said units of programming at said intermediate transmission station

Claim 5 recites "receive said units of programming at said intermediate transmission station." Ex. 1001, 292:6–7.

Petitioner contends that Cox '645 and Cox '404 teach this limitation because Cox '645's head end determines whether to receive the teletext page based on the magazine and page number codes in the control data. Pet. 58 (citing Ex. 1003 ¶ 165). Petitioner argues that Cox '645's control data includes a "magazine code" and "page number code," while the decoder at Cox '645's head end receives, such as through a keyboard, magazine and page number codes identifying teletext pages the head end is authorized to receive. *Id.* (citing Ex. 1006, 4:3–7, 5:14–18). According to Petitioner, the "decoder compares the magazine and page number codes for the teletext page with the authorized magazine and page number codes to determine whether to receive the teletext page." *Id.* (citing Ex. 1006, 1:37–60, 5:10–18; Ex. 1003 ¶ 165).

Patent Owner does not dispute Petitioner's contentions. *See generally* PO Resp. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

Based on the entirety of the trial record before us, we find that Petitioner has shown that Cox '645 teaches controlling the head end based on the control data to receive the teletext page at the head end, thereby meeting the limitation recited by the challenged claim.

f. communicate said selected a portion of said-units of programming to a storage location

Claim 5 recites "communicate said selected a portion of said-units of programming to a storage location." Ex. 1001, 292:7–9.

Petitioner contends that Cox '645 teaches that data acquisition circuit 30 couples a teletext page to the data inputs of the page memories via signal distribution control circuit 36 that enables the teletext page to be written to page memory. Pet. 59–60 (citing Ex. 1006, 5:18–45). Petitioner then relies on Cox '404's teaching of communicating the teletext page by communicating the character bytes of the teletext page to the page memory. Pet. 60 (citing Ex. 1007, 6:9–23).

Patent Owner does not dispute Petitioner's contentions. *See generally* PO Resp. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

Based on the entirety of the trial record before us, we find that Petitioner has shown that the character bytes in the teletext page being written to a page memory as disclosed in Cox '645 and Cox '404 meets the limitation recited by the challenged claim.

g. store said selected a portion of said units of programming at said storage location

Claim 5 recites “store said selected a portion of said units of programming at said storage location.” Ex. 1001, 292:10–11.

Petitioner contends “*Cox* ’645 and *Cox* ’404 teach controlling the head end based on the control data to store the character bytes of the teletext page in the page memory” because “in the proposed combination the head end stores the character bytes of the teletext page in the page memory identified by the memory page address byte in the control data.” Pet. 61 (citing Ex. 1003 ¶¶ 171–73). According to Petitioner, the data acquisition circuit in *Cox* ’645 “couples a teletext page to the data inputs of the page memories and couples the memory page address byte for the teletext page to the signal distribution control circuit.” *Id.* (citing Ex. 1006, 5:18–24). Petitioner argues that “[t]he signal distribution control circuit processes the memory page address byte to generate a ‘page memory select signal corresponding to the memory page address byte’” and specifically, the “page memory select signal is coupled to the ‘select’ input of each of the page memories, thereby selecting the page memory corresponding to the memory page address byte.” Pet. 61 (citing Ex. 1006, 5:26–33). Petitioner then argues that “[t]he signal distribution control circuit then generates an output signal enabling the ‘write’ input of the selected page memory, thereby storing the teletext page at the selected page memory.” *Id.* (citing Ex. 1006, 5:34–45). Petitioner cites to *Cox* ’404, which teaches “storing the teletext page involves storing the character bytes of the teletext page to the page memory.” *Id.* (citing Ex. 1007, 6:9–23).

Patent Owner does not dispute Petitioner's contentions. *See generally* PO Resp. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

Based on the entirety of the trial record before us, we find that Petitioner has shown that the character bytes in the teletext page being stored in a page memory as disclosed in Cox '645 and Cox '404 meets the limitation recited by the challenged claim.

h. alter said operating records stored at said intermediate transmission station to indicate at least one of reception and storage of said selected a portion of units of programming

Claim 5 recites “alter said operating records stored at said intermediate transmission station to indicate at least one of reception and storage of said selected a portion of units of programming.” Ex. 1001, 292:12–16.

Petitioner contends that Cox '645 and Cox '404 teach this limitation. Pet. 62–66. Petitioner specifically argues that Cox '404 teaches that its column address code (i.e., part of the operating record according to Petitioner) is incremented each time a character byte of the teletext page is stored in page memory and that the incrementing indicates storage of each character byte of the teletext page. *Id.* at 62 (citing Ex. 1003 ¶ 176). Petitioner notes that Cox '404 discloses that “[i]n storing each character byte into its corresponding memory location, the decoder generates an ‘address signal’ that includes, in addition to the row address code of the row in which the character byte appears in the teletext page, a ‘column address code.’” *Id.* at 63 (citing Ex. 1007, 6:12–19).

Petitioner then cites to Cox '404's disclosure that the “column address code is ‘internally generated’ and ‘incremented in response to each character Byte of the acquired data row’ of the teletext page.” *Id.* at 63–64 (citing

Ex. 1007, 6:16–17). According to Petitioner, such internal generating and incrementing is not inconsistent with the column address code being a “record” as recited by the claims. Pet. Reply 21. Petitioner further relies on Cox ’645 to teach storing the teletext page based on the control data. Pet. 62 (citing Ex. 1003 ¶ 177).

Petitioner relies on the testimony of Mr. Lipoff to support its position. Pet. 62–66 (citing Ex. 1003 ¶¶ 175–82). Mr. Lipoff testifies that “Cox ’645 does not describe how the teletext page is stored in the page memory at the decoder, stating only that storage occurs ‘in a conventional manner.’” Ex. 1003 ¶ 180 (citing Ex. 1006, 5:40–45). According to Mr. Lipoff’s testimony, a person of ordinary skill in the art “would have turned to knowledge in the art, such as Cox ’404’s disclosure of storing a teletext page in a page memory at a decoder, Ex. 1007, 5:44–51, 6:4–30, to implement Cox ’645’s teachings.” *Id.* Mr. Lipoff further testifies that a person of ordinary skill in the art would have understood from Cox ’645 and Cox ’404 that

because the acquisition process is triggered by a match between the magazine and page number codes and the page-header row stored upon entry at the keyboard, terminating the data acquisition process of that page would be effected by altering the stored magazine and page number codes, either to indicate another magazine and page number code entered by the user or to indicate nothing.

Id. ¶ 181. Mr. Lipoff specifically testifies that “insofar as the altering of this stored magazine and page number codes indicates that the teletext page having that magazine and page number code has been fully received and stored, this altering indicates receipt and storage of that teletext page.” *Id.*

Patent Owner disputes Petitioner's position for several reasons. First, Patent Owner contends that Petitioner identifies two items as operating records: (1) the magazine and page numbers supplied by the user through the keyboard; and (2) the column address code that increments as the characters of the teletext page are written into the page memory. PO Resp. 26. According to Patent Owner, the column address code is not an "operating record," but is an internally generated control signal for addressing page memory 46. *Id.* at 26–27 (citing Ex. 1007, 6:15–17, Fig. 3; Ex. 2001 ¶ 51). Patent Owner argues that "[t]he column address code is simply advanced by an internal clock so that the next byte will be written in the next column address and will be reset when a new row address is input." *Id.*

Second, as Patent Owner's declarant testifies, "[t]he column address code is not a record and is **never** used as a record." Ex. 2001 ¶ 51. Patent Owner contends a "record is information that relates to a past event. Even if the column address code is stored (of which no disclosure exists), it does not relate to any past event." PO Sur-Reply 7. Thus, according to Patent Owner, "[t]he column address code of *Cox* '404 is a piece of data that specifies a location in memory into which data *will* be stored. . . . while a clock internal of data acquisition circuit 44 will increment the column address for each character Byte of the row." *Id.* (citing Ex. 1007, 6:17–23). Patent Owner further argues that "any column address code would be immediately changed to support future writes to a new memory location (and to prevent subsequent data from overwriting a given memory location)." *Id.* Therefore, Patent Owner concludes that no record is maintained "to indicate at least one of reception and storage" as claimed. PO Sur-Reply 7.

Third, Patent Owner contends that if each of (1) the column address code and (2) the magazine and page number codes were an “operating record,” the disputed claim element is only satisfied if both of them are altered “to indicate at least one of reception and storage of said selected a portion of units of programming,” which Patent Owner argues is not the case. *Id.* at 8. Patent Owner specifically argues that “Cox ’404 discloses the storage of the corresponding character occurring *while* the column address code increments. Because of the contemporaneous nature of the two events (storage and altering the column address code), one cannot indicate the other.” *Id.* at 9; Tr. 35:7–37:2. Patent Owner relies on the testimony of its declarant, Dr. Weaver, to support its position that the causal relationship between the storage and incrementing is missing. *See* Ex. 2001 ¶ 58.

We agree with Patent Owner that Petitioner fails to demonstrate sufficiently that Cox ’404’s column address code constitutes a record or that it is stored. *See, e.g.*, Tr. 30:25–31:14. Additionally, we agree with Patent Owner that Petitioner fails to demonstrate that the column address code is altered “to indicate at least one of reception and storage of said selected a portion of units of programming,” as required by the challenged claim. Contrary to Petitioner’s argument that Cox ’404 discloses that “generated column address code which is incremented in response to each character Byte of the acquired data row” (Pet. 62–64; Tr. 17:24–20:13), Cox ’404 explicitly states the following:

Each character Byte of a data row acquired by data acquisition circuit 44 is coupled to page memory 46 by a data line 56 and written into a corresponding memory location thereof in accordance with the address signals developed on an address bus 58, the address signals being formed by the row address code transmitted with the data row and an internally generated column

address code which is incremented **in response** to each character Byte of the acquired data row. In other words, the row address code transmitted with each data row will cause the character Bytes of that row to be stored in the corresponding memory address row of page memory 46 while a clock internal of data acquisition circuit 44 will increment the column address for each character Byte of the row.

Ex. 1007, 6:9–23 (emphasis added). We understand Cox ’404 to disclose that its incrementing step occurs in data acquisition circuit 44 of Figure 3, while the first character is being stored in page memory 46. *Id.* at 6:13–16, Fig. 3. But we do not find where incrementing is an indication of storage or that the purported record is maintained to indicate reception of a unit of programming. Based on the entire disclosure of Cox ’404, the incrementing may happen before, after, or at exactly the same time as the storage of the first character. Cox ’404 does not disclose any feedback mechanism for page memory 46 to indicate storage to data acquisition circuit 44, and therefore, the incrementing does not appear to be an indication of storage. *See id.* at 6:19–23, Fig. 3.

Accordingly, based on the entirety of the trial record before us, we find Petitioner has failed to demonstrate by a preponderance of the evidence that the combination of Cox ’645 and Cox ’404 teaches more than one operating record or that the alleged operating records are altered to indicate reception and storage of a selected unit of programming as recited by the challenged claim.

- i. subsequently transmitting said selected a portion of said units of programming to said at least one subscriber station*

Claim 5 recites “subsequently transmitting said selected a portion of said units of programming to said at least one subscriber station.” Ex. 1001, 292:16–18.

Petitioner contends that Cox ’645 and Cox ’404 teach this limitation. Pet. 66–67. Petitioner specifically contends that Cox ’645 teaches transmitting the teletext page to the subscriber receiver while Cox ’404 teaches that the teletext page includes the character bytes. *Id.* at 66. According to Petitioner, Cox ’645 teaches that, once the teletext page is stored in the page memory, it is transmitted by the head end to the subscriber receiver during “the time interval defined by the time-on and time-off codes” for the teletext page. *Id.* (citing Ex. 1006, 6:3–21). Petitioner then notes that “Cox ’404 explains that each teletext page includes rows of character bytes.” *Id.* (citing Ex. 1007, 6:14–15).

Patent Owner does not dispute Petitioner’s contentions. *See generally* PO Resp. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

Based on the entirety of the trial record before us, we find that Petitioner has shown that the character bytes in the teletext page are transmitted to the subscriber receiver in Cox ’645 and Cox ’404 as required by the challenged claim.

- j. Reasons to Combine the Teachings of Cox ’645 and Cox ’404*

Petitioner contends a person of ordinary skill in the art at the time of the invention would have had reason to combine the teachings of Cox ’645 and Cox ’404. Pet. 41. Petitioner specifically argues that a person of

ordinary skill in the art would have been motivated to modify Cox '645 with the teachings of Cox '404 because Cox '645 describes a system that uses control data to control a head end in the transmission of teletext pages stored in a page memory, but only says that the teletext pages are stored in a “conventional manner.” *Id.* (citing Ex. 1006, 5:40–45). As Cox '404 discloses storing a teletext page in a page memory at a decoder, Petitioner argues that a person of ordinary skill in the art would have turned to the knowledge disclosed in Cox '404 in order to implement the “conventional manner” disclosed in Cox '645. *Id.* (citing Ex. 1007, 5:44–51, 6:4–30).

Patent Owner, however, contends that a person of ordinary skill in the art would not have attempted to modify Cox '645 with the teachings of Cox '404. PO Resp. 25–26. Patent Owner asserts that the column address code in Cox '404 is for addressing page memory 46, shown in Figure 3, whereas Cox '645 is silent as to any addressable column address or column address code and only discloses time base circuit 32 with reference to row address bytes. *Id.* at 25 (citing Ex. 2001 ¶ 49). Thus, according to Patent Owner, a person of ordinary skill in the art would not have been motivated to implement a multi-page storage of Cox '645 with the system and methods of a single-page storage of Cox '404. *Id.*

We do not agree with Patent Owner's arguments. Based on the current record, Petitioner brings in Cox '404 for a more explicit teaching of the conventional manner to store a teletext page as discussed in Cox '645. *See* Ex. 1006, 5:40–45; Ex. 1007, 5:44–51, 6:4–30. A motivation to combine may be found “explicitly or implicitly in market forces; design incentives; the ‘interrelated teachings of multiple patents’; ‘any need or problem known in the field of endeavor at the time of invention and addressed by the patent’;

and the background knowledge, creativity, and common sense of the person of ordinary skill.” *ZUP*, 896 F.3d at 1371 (quoting *Plantronics*, 724 F.3d at 1354). Cox ’404 appears to supply information as to what Cox ’645 describes as the “conventional manner” to store a teletext page.

We have considered carefully all arguments and supporting evidence regarding the rationale for combining the teachings of Cox ’404 with Cox ’645. After doing so, we find that Petitioner provides an adequate reason, with rational underpinnings, that a person of skill in the art at the time of the invention would have had reason to combine the teachings from the cited prior art.

k. Summary Regarding Claim 5

After careful consideration of all arguments and evidence, we determine, on a full record, Petitioner fails to demonstrate by a preponderance of evidence that independent claim 5 would have been obvious in view of the combined teachings of Cox ’404 and Cox ’645 under 35 U.S.C. § 103.

4. Analysis of Cox ’404 and Cox ’645 as Applied to Challenged Dependent Claims 6–10

Petitioner contends that dependent claims 6–10 of the ’560 patent are unpatentable under 35 U.S.C. § 103 as being obvious in view of Cox ’404 and Cox ’645 and provides specific arguments for each challenged claim. Pet. 67–77 (citing Ex. 1003 ¶¶ 189–210; Ex. 1006, Fig. 5, 4:23–32, 5:26–45, 6:3–21, 6:55–7:10). Patent Owner contends that the cited prior art does not render dependent claims 6–10 of the ’560 patent obvious. PO Resp. 35–38. Patent Owner further contends the combined prior art does not teach or suggest “storing predetermined characteristics” as required by claims 9 and 10. *Id.* (citing Ex. 2001 ¶¶ 62–64).

On this record and for purposes of institution, for the same reason discussed above, we determine Petitioner fails to demonstrate by a preponderance of evidence that dependent claims 6–10 would have been obvious in view of the combined teachings of Cox '404 and Cox '645 under 35 U.S.C. § 103.

III. CONSTITUTIONAL CHALLENGE

Patent Owner contends that “this proceeding is unconstitutional and violates the Appointments Clause.” Resp. 22. Patent Owner also contends that the Federal Circuit “attempted to cure the constitutional violation by eliminating tenure protections afforded to PTAB judges by the statute” and that “this purported remedy by itself simply fails to cure the violation.” *Id.* at 22–23 (citing *Arthrex, Inc. v. Smith & Nephew, Inc.*, 941 F.3d 1320 (Fed. Cir. 2019)).

We do not reach Patent Owner’s Appointments Clause challenge because the Supreme Court resolved the issue in *United States v. Arthrex, Inc.*, 141 S. Ct. 1970, 1986–87, 1997 (2021).

IV. CONCLUSION

Based on the evidence presented with the Petition, the evidence introduced during the trial, and the parties’ respective arguments, Petitioner has shown by a preponderance of the evidence that claim 4 would have been obvious to a person of ordinary skill in the art at the time of the invention in view of Torpey’s teachings in combination with that of Cox '645.

But Petitioner has not shown by a preponderance of the evidence that claims 5–10 are unpatentable under § 103(a) as obvious over Cox '645 and Cox '404.⁶

In summary:

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
4	103(a)	Torpey, Cox '645	4	
5–10	103(a)	Cox '645, Cox '404		5–10
Overall Outcome			4	5–10

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claim 4 in the '560 patent is determined to be unpatentable;

ORDERED that claims 5–10 in the '560 patent are not determined to be unpatentable; and

⁶ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding after the issuance of this Final Written Decision, we draw Patent Owner's attention to the April 2019 Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. §§ 42.8(a)(3), (b)(2).

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

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