

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD. and
GOOGLE LLC,
Petitioner,

v.

IRON OAK TECHNOLOGIES, LLC,
Patent Owner.

IPR2018-01553¹
Patent 5,699,275

Before SALLY C. MEDLEY, PATRICK R. SCANLON, and
ARTHUR M. PESLAK, *Administrative Patent Judges*.

MEDLEY, *Administrative Patent Judge*.

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

¹ Google LLC, who filed a petition in IPR2019-00111, has been joined as a petitioner in this proceeding.

I. INTRODUCTION

Samsung Electronics Co., Ltd. (“Petitioner”)² filed a Petition for *inter partes* review of claim 1 of U.S. Patent No. 5,699,275 (Ex. 1001, “the ’275 patent”). Paper 1 (“Pet.”). Iron Oak Technologies, LLC (“Patent Owner”) filed a Preliminary Response. Paper 8 (“Prelim. Resp.”). Upon consideration of the Petition and Preliminary Response, we instituted *inter partes* review, pursuant to 35 U.S.C. § 314, as to claim 1 based on all challenges set forth in the Petition. Paper 9 (“Decision to Institute” or “Dec.”).

Subsequent to institution, Patent Owner filed a Patent Owner Response (Paper 18, “PO Resp.”), Petitioner filed a Reply to Patent Owner’s Response (Paper 20, “Pet. Reply”), and Patent Owner filed a Sur-reply (Paper 21, “Sur-reply”). On November 4, 2019, we held a consolidated oral hearing for this case and related Case IPR2018-01552. A transcript of the hearing has been entered into the record. Paper 28 (“Tr.”).

In our Scheduling Order, we notified the parties that “any arguments for patentability not raised in the [Patent Owner] response may be deemed waived.” See Paper 10, 5; see also Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012) (“The patent owner response . . . should identify all the involved claims that are believed to be patentable and state the basis for that belief.”). In addition, “[a]rguments must not be incorporated by reference from one document into another document.” 37 C.F.R. § 42.6(a)(3) (2018). In violation of our rule and guidance, Patent

² Petitioner, Samsung Electronics Co., Ltd., identifies Samsung Electronics America, Inc. as a real party-in-interest. Pet. 1.

Owner argues in its Patent Owner Response: “Patent Owner incorporates herein those arguments presented in its Preliminary Response for all purposes.” PO Resp. 1. We decline to consider whatever Patent Owner considers is “incorporated” from its Preliminary Response as if it were a part of Patent Owner’s Response, but only consider arguments substantively presented in Patent Owner’s Response. Any arguments for patentability not raised in the Patent Owner Response are deemed waived.

For the reasons that follow, we conclude that Petitioner has proven by a preponderance of the evidence that claim 1 of the ’275 patent is unpatentable.

A. Related Matters

The parties indicate that the ’275 patent is the subject of several stayed court proceedings. Pet. 1–2; Paper 6, 2–3; Paper 17, 4. The ’275 patent also is the subject of Board proceedings IPR2018-01552 and IPR2019-00106. A Final Written Decision is made in each of IPR2018-01552 and IPR2019-00106 concurrently with this Final Written Decision. In IPR2019-00110, Google LLC filed a motion to join IPR2018-01552, which we granted. *See Google LLC v. Iron Oak Techs., LLC*, IPR2019-00110, Paper 11 (PTAB Apr. 3, 2019). In IPR2019-00111, Google LLC filed a motion to join IPR2018-01553, which we granted. *See Google LLC v. Iron Oak Techs., LLC*, IPR2019-00111, Paper 10 (PTAB Apr. 3, 2019).

B. The ’275 Patent

The specification of the ’275 patent describes a system “for remote patching or updating of operating code located in a mobile unit.” Ex. 1001, code (57). The system includes a manager host operable to initiate transmission of a discrete patch message to a mobile unit. *Id.* The mobile

unit is operable to create patched operating code by merging the patch with the current operating code and to switch execution to the patched operating code. *Id.* The mobile unit also can receive a download message defining new operating code to replace current operating code. *Id.*

C. Illustrative Claim

Petitioner challenges claim 1 of the '275 patent. Claim 1 is reproduced below.

1. A system for remote patching of operating code located in a mobile unit, comprising:

a manager host operable to initiate transmission through a wireless communication network of at least one discrete patch message defining at least one patch;

a first mobile unit operable to receive the at least one discrete patch message, the first mobile unit further operable to create patched operating code by merging the at least one patch with current operating code located in the first mobile unit and to switch execution to the patched operating code; and

a second mobile unit operable to receive the at least one discrete patch message, the second mobile unit further operable to create patched operating code by merging the at least one patch with current operating code located in the second mobile unit and to switch execution to the patched operating code; and

wherein the manager host is further operable to address the at least one discrete patch message such that the at least one discrete patch message is transmitted to the first mobile unit but not to the second mobile unit.

Id. at 13:32–53.

D. Instituted Grounds of Unpatentability

We instituted trial based on all asserted grounds of unpatentability under 35 U.S.C.³ as follows (Dec. 4, 19):

Challenged Claim	35 U.S.C. §	References
1	103	Hapka, ⁴ Parrillo ⁵
1	103	Hapka, Parrillo, Wortham ⁶

II. ANALYSIS

A. Principles of Law

To prevail in its challenge to Patent Owner’s claim, Petitioner must demonstrate by a preponderance of the evidence⁷ that the claim is unpatentable. 35 U.S.C. § 316(e) (2012); 37 C.F.R. § 42.1(d). A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time of the invention to a person having ordinary skill in the art. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of

³ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. §§ 102 and 103. Because the ’275 patent has an effective filing date before the effective date of the applicable AIA amendments, we refer to the pre-AIA versions of 35 U.S.C. §§ 102 and 103.

⁴ U.S. Patent No. 5,619,412, issued Apr. 8, 1997 (Ex. 1008, “Hapka”).

⁵ U.S. Patent No. 5,442,553, issued Aug. 15, 1995 (Ex. 1009, “Parrillo”).

⁶ U.S. Patent No. 5,155,689, issued Oct. 13, 1992 (Ex. 1014, “Wortham”).

⁷ The burden of showing something by a preponderance of the evidence simply requires the trier of fact to believe that the existence of a fact is more probable than its nonexistence before the trier of fact may find in favor of the party who carries the burden. *Concrete Pipe & Prods. of Cal., Inc. v. Constr. Laborers Pension Tr. for S. Cal.*, 508 U.S. 602, 622 (1993).

underlying factual determinations including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective indicia of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill

In determining the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citation omitted). Petitioner relies on the testimony of Dr. Benjamin Bederson, who testifies that a person with ordinary skill in the art “would have had at least a Bachelor’s degree in computer science, electrical engineering, or a similar discipline and at least two years additional relevant experience relating to, for example, device software management, including the remote update of code, such as mobile device software development and mobile device software updates.” Pet. 4; Ex. 1002 ¶ 20. Patent Owner does not propose an alternative assessment. *See generally* PO Resp.

We adopt Dr. Bederson’s assessment of a person with ordinary skill in the art as it is consistent with the ’275 patent and the asserted prior art. We further note that the prior art of record in the instant proceeding reflects the appropriate level of ordinary skill in the art. *Cf. Okajima v. Bourdeau*, 261 F.3d 1350, 1354–55 (Fed. Cir. 2001) (holding the Board may omit specific findings as to the level of ordinary skill in the art “where the prior art itself reflects an appropriate level and a need for testimony is not shown”).

C. Claim Construction

The '275 patent is expired. Ex. 1001; Pet. 8. For claims of an expired patent, our claim interpretation is similar to that of a district court. *See In re Rambus, Inc.*, 694 F.3d 42, 46 (Fed. Cir. 2012). In particular, for claims of an expired patent, the Board construes claims to generally have their ordinary and customary meaning, as that meaning would be understood by one of ordinary skill in the art in the context of the entire patent disclosure. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). Petitioner, recognizing that the '275 patent is expired, contends that the claims should be construed consistent with the principles set forth in *Phillips*. Pet. 8. Patent Owner does not contend otherwise. *See generally* PO Resp.

Petitioner proposes constructions for the following claim terms found in claim 1: “mobile unit,” “operating code,” “manager host operable to initiate transmission through a wireless communication network of at least one discrete patch message defining at least one patch,” “merging the at least one patch with current operating code,” and “manager host is further operable to address the at least one discrete patch message.” Pet. 8–16.

In our Decision to Institute, we adopted Petitioner’s proposed claim construction, interpreting “merging the at least one patch with current operating code” as “incorporating the at least one patch into the current operating code, without replacing the entire current operating code.” Dec. 5. Neither party has indicated that our interpretation was improper, and we do not perceive any reason or evidence that now compels any deviation from our initial interpretation. Accordingly, “merging the at least one patch with

current operating code” means “incorporating the at least one patch into the current operating code, without replacing the entire current operating code.”

“second mobile unit” and the “wherein” limitation

Claim 1 recites “wherein the manager host is further operable to address the at least one discrete patch message such that the at least one discrete patch message is transmitted to the first mobile unit but not to the second mobile unit” (the “wherein limitation”). In our Decision to Institute, we adopted Petitioner’s claim construction and interpreted “manager host is further operable to address the at least one discrete patch message” as “[manager host is further operable to] decide which specific mobile unit to send [the at least one discrete patch message] to before beginning transmission” of the message. Dec. 6. Neither party has indicated that our interpretation was improper, and we do not perceive any reason or evidence that now compels any deviation from our initial interpretation. *See generally* PO Resp.; Pet. Reply; *see also* Tr. 29:6–8.

Patent Owner, however, argues that the wherein limitation, and claim 1 in general, implicates a narrow construction having temporal restrictions. *See* PO Resp. 3–6; Sur-reply 2–9; Tr. 5:24–26, 30:1–3. Patent Owner argues that the “second mobile unit of claim 1 must be in a condition that its current operating code **could** be updated by the patch message **sent to the first mobile unit**” and that a “mobile unit whose operating code has been updated by **the patch message** cannot be a ‘second mobile unit.’” PO Resp. 5 (emphasis in original); *see also* Sur-reply 3 (“If the alleged Second Mobile Unit cannot create patched operating code from that patch message (such as because the operating code is already patched) that unit cannot be the ‘Second Mobile Unit’ of claim 1 for purposes of that patch message”).

Patent Owner further argues that “*at the time of transmission of the patch message by the manager host* both mobile units must be operable to create patched operating code from current operating code.” PO Resp. 6 (emphasis added).

Patent Owner does not direct us to evidence, such as the prosecution history or specification of the ’275 patent, to support its contentions. In particular, Patent Owner does not direct us to evidence to support reading claim 1 to include that *at the time of transmission* of the patch message by the manager host, both mobile units must be operable to create patched operating code from current operating code. The claim language does not specify when the mobile units must be “operable to create patched operating code” from current operating code, only that they are “operable to” do so. Ex. 1001, 13:37–49.

Moreover, we disagree that a second mobile unit that has already created patched operating code from the at least one patch message cannot meet the “second mobile unit” limitation as Patent Owner argues. PO Resp. 5; Sur-reply 3. We note that claim 14, which depends directly from claim 1, recites “wherein the manager host is further operable to address the at least one discrete patch message such that the *at least one discrete patch message is transmitted* to the first mobile unit and *to the second mobile unit*.” Ex. 1001, 14:22–26 (emphasis added). Accordingly, the full scope of claim 1 encompasses that the at least one patch message is transmitted to the second mobile unit. There is nothing in claim 1 that excludes a second mobile unit that has already created patched operating code from the at least one patch message from meeting the claim 1 wherein limitation. A second mobile unit that is capable of creating patched operating code in some circumstances still

satisfies the claim. Claim 1 is an apparatus claim, not a method claim. “[A] prior art reference may anticipate or render obvious an apparatus claim—depending on the claim language—if the reference discloses an apparatus that is reasonably capable of operating so as to meet the claim limitations, even if it does not meet the claim limitations in all modes of operation.”

ParkerVision, Inc. v. Qualcomm Inc., 903 F.3d 1354, 1361 (Fed. Cir. 2018).

We agree with Petitioner that a mobile device “whose operating code has been updated by the patch message can be a ‘second mobile device’ because, for it to have been updated, it must be ‘operable to’ receive the message and create patched operating code.” Pet. Reply 5–6. A mobile unit that has created patched operating code is clearly operable to do so, because it has created the patched operating code. Again, there are no timing requirements for *apparatus* claim 1 as Patent Owner argues.

Accordingly, as in our Decision to Institute, we construe “manager host is further operable to address the at least one discrete patch message” to mean that the “[manager host is further operable to] decide which specific mobile unit to send [the at least one discrete patch message] to before beginning transmission” of the message. *See* Dec. 6.

For purposes of this decision, we need not expressly construe any other claim term at this time. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (holding that “only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy”); *see also Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs.* in the context of an *inter partes* review).

D. Asserted Obviousness of Claim 1 over Hapka and Parrillo

Petitioner contends claim 1 is unpatentable under 35 U.S.C. § 103(a) as obvious over Hapka in view of Parrillo. Pet. 16–61. In support of its showing, Petitioner relies upon the declaration of Dr. Bederson. *Id.* (citing Ex. 1002).

1. Hapka

Hapka describes “[a] system for remotely accessing an engine control system and selectively controlling and changing an existing engine algorithm.” Ex. 1008, code (57). Hapka further describes a remote command interface device that modifies data using translating software so that it is readable by the engine control system. *Id.* at 3:23–25. The translating software may be incorporated into the computer terminal at the fixed base site, the on-board vehicle communications system, or the engine control system. *Id.* at 3:32–34. The system allows a remote user to enable or disable an engine idle shutdown device attached to a vehicle’s engine. *Id.* at 4:34–36. Figures 1a and 1b of Hapka are reproduced below.

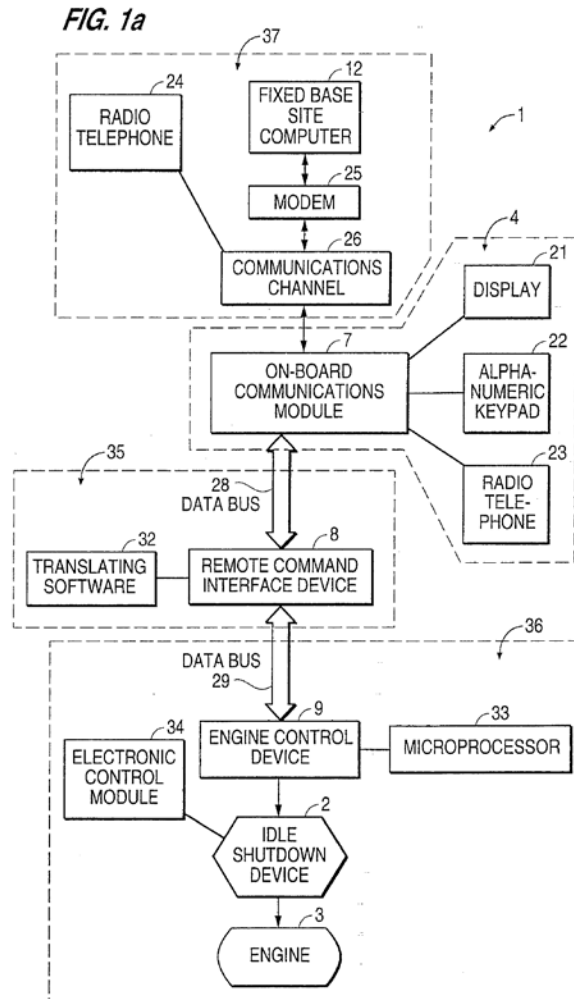
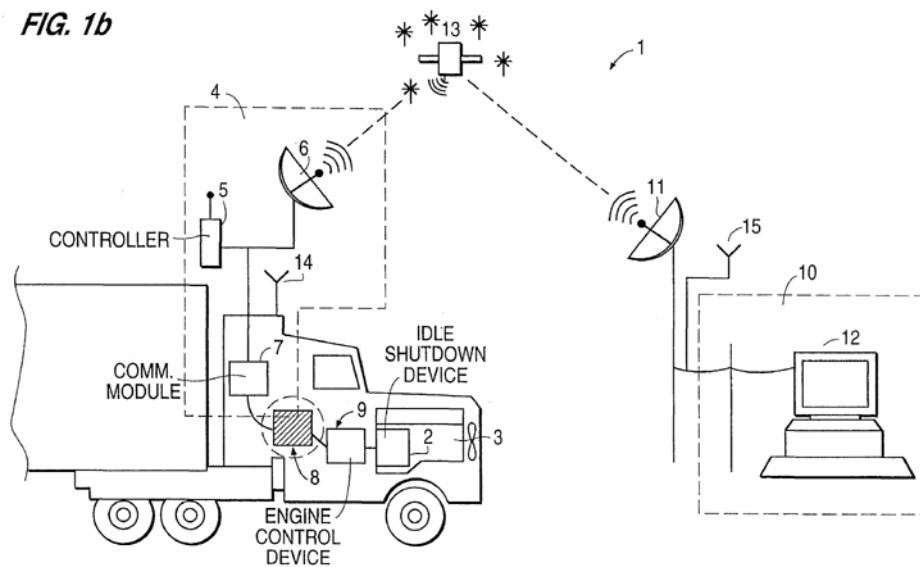


Figure 1a of Hapka illustrates a block diagram of a vehicle control system.

FIG. 1b



Hapka's Figure 1b illustrates a vehicle idle control system.

Figure 1a of Hapka shows vehicle control system 1 with fixed base site equipment 37, on-board communications system 4 located on a vehicle, remote command interface section 35, and engine control system 36. *Id.* at 4:5–10. Fixed base site equipment includes computer 12 with radio telephone 24, modem 25, and communications channel 26. *Id.* at 4:10–12. Engine control system 36 includes engine control device 9, which includes microprocessor 33 for storing, processing, and implementing a sequence of data commands received from data bus 29. *Id.* at 4:25–29. Engine control device 9 is connected to idle shutdown device 2, which houses electronic control module 34 for monitoring the throttle, clutch, and service brake. *Id.* at 4:29–32.

2. Parrillo

Parrillo describes a wireless software upgrade system for mobile and stationary vehicles. Ex. 1009, 1:31–33. Parrillo describes that “when

specific programs are upgraded or new algorithms are developed/adapted, the upgrade or complete new program is transmitted to” the vehicle’s microprocessor during a time that the vehicle is not being used. *Id.* at 4:60–64. Figure 1 of Parrillo is reproduced below.

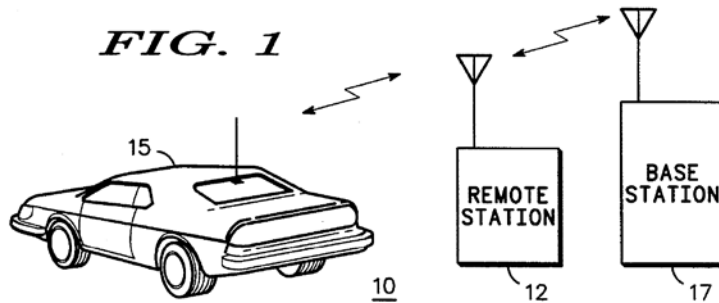


Figure 1 of Parrillo illustrates a diagnostic and software upgrade system.

Parrillo describes that in the operation of the wireless diagnostic and software upgrade system, remote station 12 interrogates vehicle 15 at some time when it is not being used. *Id.* at 4:65–68.

3. Discussion

The preamble of claim 1 recites “a system for remote patching of operating code located in a mobile unit.” Petitioner argues, to the extent that the preamble is limiting, Hapka in view of Parrillo meets the preamble. Pet. 25.⁸ Petitioner contends, and we agree, that Hapka discloses a “system” that includes a fixed base site and components on board a vehicle, where the system provides remote updating of software for controlling the vehicle’s

⁸ We need not resolve the issue of whether the preamble is limiting because, regardless of whether the preamble is limiting, Petitioner shows that Hapka in view of Parrillo meets the preamble.

engine. *Id.* at 25 (citing Ex. 1008, 3:66–4:32, Figs. 1a–1b; Ex. 1002 ¶¶ 202–203). In particular, Petitioner shows, and we find, that Hapka’s described engine control system 36, which includes control device 9, microprocessor 33, and idle shutdown device 2, on board a vehicle is a mobile unit. *Id.* at 25–26 (citing Ex. 1008, 4:5–53, 6:9–29, Figs. 1a–1b; Ex. 1002 ¶¶ 202–203). Petitioner asserts, and we agree, that system 36 is a “mobile unit” because system 36 is mounted to or otherwise associated with a vehicle for use while in motion and is thus portable and battery-powered. *Id.* at 26–27 (citing Ex. 1008, 4:5–54, 5:1–12, 6:9–55, 7:32–8:61, Fig. 1b; Ex. 1002 ¶¶ 202–203). Petitioner further argues, and we are persuaded, that to the extent Hapka’s system 36 is not battery-powered, it would have been obvious to configure system 36 to be battery-powered to further Hapka’s goal of modifying software code remotely while the vehicle is in motion. *Id.* at 27–28 (citing Ex. 1008, 2:17–28, 2:35–42, 3:7–10, 3:34–37, 9:45–54; Ex. 1002 ¶ 204).

Notwithstanding Patent Owner’s late argument that Hapka fails to disclose operating code (Sur-reply 7–8), discussed below, we determine that Petitioner has shown by a preponderance of the evidence that Hapka discloses operating code. In particular, Petitioner contends, and we agree, that Hapka’s algorithm includes the sequence of operating commands implemented by a computer operated engine controller that is stored in the vehicle’s engine control system 36 (“mobile unit”), and therefore, meets the limitation of being “operating code.” *Id.* at 28–29 (citing Ex. 1008, 2:11–16, 3:65–4:4, 6:44–7:9, 8:33–61; Ex. 1002 ¶ 205). Petitioner asserts, and we agree, that Hapka generally describes a system for remote patching of operating code located in a mobile unit, because engine control system 36 (“mobile unit”) can modify an engine algorithm (“operating code”) based on

a received message from computer 12 of a fixed base site. *Id.* at 29 (citing Ex. 1008, 2:36–46, 3:7–13, 8:33–61, Figs. 1a–1b; Ex. 1002 ¶¶ 206–207).

Petitioner relies on Parrillo for its description of details of the claimed “patching of operating code” and provides reasons for combining Hapka and Parrillo. Pet. 30–39. In particular, Petitioner contends, and we agree, that Parrillo’s disclosure that an upgrade or a complete new program can be wirelessly transmitted from a remote station to a vehicle’s microprocessor meets the claimed “patching of operating code.” *Id.* at 30–35 (citing Ex. 1009, code (57), 1:28–38, 2:8–21, 2:32–3:28, 3:39–4:50, 4:60–5:2, 5:14–30, Figs. 1, 2; Ex. 1002 ¶¶ 208–216). Petitioner provides reasons for combining Hapka and Parrillo, asserting that due to the compatibility of Hapka and Parrillo, a person having ordinary skill in the art would have been motivated to implement the patching features of Parrillo to allow corrections and/or updates to be remotely installed in the current executing algorithms of Hapka’s vehicle components. *Id.* at 36 (citing Ex. 1002 ¶ 218). Petitioner provides additional persuasive reasons for combining Hapka with Parrillo, along with reasons why such a modification would have been expected to have been successful. *Id.* at 36–39. Based on our review of Petitioner’s proposed reasons to combine and supporting evidence, we determine that Petitioner has shown by a preponderance of the evidence that a person of ordinary skill in the art would have been motivated to combine Hapka and Parrillo, and that the combination meets the recited “patching of operating code.”

In its Sur-reply, Patent Owner argues that in Hapka, there is no disclosure that the software or firmware is modified or patched and that Hapka’s “parameter” or “data” used by an engine control algorithm is not

“operating code.” Sur-reply 7–8. We understand Patent Owner to argue that Hapka does not meet the “operating code” requirement of claim 1. Tr. 25:5–8.⁹ Nowhere, however, does Patent Owner make this argument in the Patent Owner Response. The argument is improper, as it is raised for the first time in the Sur-reply and is not responsive to arguments presented in Petitioner’s Reply. *See, e.g.*, 37 C.F.R. § 42.23(b); Trial Practice Guide Update 14–15 (Aug. 2018)¹⁰ (“Generally, a reply or sur-reply may only respond to arguments raised in the preceding brief. . . . [A] reply or sur-reply that raises a new issue or belatedly presents evidence may not be considered. The Board is not required to attempt to sort proper from improper portions of the reply or sur-reply.”); *see also* Patent Trial and Appeal Board Consolidated Trial Practice Guide 73–75 (Nov. 2019)¹¹ (consolidating prior Trial Practice Guide and updates). As such, we need not consider such belated arguments.

Even considering such arguments, Patent Owner’s arguments amount to unsupported attorney conjecture, which fails to rebut Petitioner’s showing. In particular, Petitioner shows by a preponderance of the evidence that Hapka’s algorithm includes the sequence of operating commands implemented by a computer operated engine controller that is stored in the vehicle’s engine control system 36 (“mobile unit”) and is “operating code.” *Id.* at 28–29 (citing Ex. 1008, 2:11–16, 3:65–4:4, 6:44–7:9, 8:33–61; Ex. 1002 ¶ 205). Dr. Bederson testifies that a person having ordinary skill in the art would have understood Hapka’s described engine operation algorithms to

⁹ Claim 1 recites “operating code” throughout claim 1.

¹⁰ *Available at*

https://www.uspto.gov/sites/default/files/documents/2018_Revised_Trial_Practice_Guide.pdf.

¹¹ *Available at* <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

be “operating code.” Ex. 1002 ¶ 205 (citing Ex. 1008, 3:65–4:4).

Dr. Bederson explains that Hapka describes (Ex. 1008, 3:65–4:4, 6:44–7:9, 8:33–61) that such engine operation algorithms, such as idle shutdown, are used to operate the mobile unit, and further describes vehicle engine operating algorithms as a “sequence of operating commands implemented by a computer operated engine controller.” *Id.* (quoting Ex. 1008, 2:11–16).

Dr. Bederson’s testimony stands unrebutted. Patent Owner did not cross-examine Dr. Bederson. Nor did Patent Owner direct us to any evidence, such as by a declarant, to rebut Dr. Bederson’s testimony. Based on the record before us, we give substantial weight to Dr. Bederson’s testimony that Hapka meets the “operating code” limitation, because his testimony is supported by Hapka itself. Ex. 1002 ¶ 205 (citing Ex. 1008, 2:11–16, 3:65–4:4, 6:44–7:9, 8:33–61). Such record evidence is not outweighed by Patent Owner’s attorney arguments.

Claim 1 further recites “a manager host operable to initiate transmission through a wireless communication network of at least one discrete patch message defining at least one patch.” Petitioner contends, and we find, that Hapka’s base site equipment including computer 12 is a manager host, which is operable to transmit information through a wireless network (communications channel 26) to one or more vehicles to transmit a message defining a modification of engine algorithms executed by engine control system 36. *Id.* at 39–41 (citing Ex. 1008, 4:5–7, 4:33–37, 4:54–66, Figs. 1a, 1b). Petitioner contends, and we agree, that Hapka describes a fleet manager that operates computer 12 to provide updates to engine algorithms executed by the on-board components of a vehicle and thus initiates transmission of the messages to the mobile units. *Id.* at 40–41 (citing Ex.

1008, 8:33–41, Figs. 1a, 1b, 5). Petitioner further contends, and we are persuaded, that Hapka begins transmission of the algorithm update message to vehicle components without first receiving a request for a patch from a mobile unit because Hapka’s fleet manager is deciding to modify and control the mobile unit’s algorithm. *Id.* at 40–42 (citing Ex. 1008, 8:33–41, Figs. 1a, 1b, 5; Ex. 1002 ¶¶ 228–229). Similarly, we find that Parrillo also discloses beginning transmission without first receiving a request. *Id.* at 43–44 (citing Ex. 1009, 4:65–5:19; Ex. 1002 ¶¶ 228–231). Petitioner further provides reasons with rational underpinnings for modifying Hapka with Parrillo, such as that the feature would allow for remote monitoring and modification of code on remote vehicles. *Id.* at 44–45 (citing Ex. 1009, 2:10–14).

We determine that it would have been obvious to a person having ordinary skill in the art to modify Hapka’s computer 12 (manager host) in the combined Hapka-Parrillo system to be operable to transmit at least one discrete patch message defining at least one patch for the reasons provided by Petitioner. *Id.* Petitioner explains, and we agree, that Hapka refers to communications sent from computer 12 to the vehicle’s component as messages, and, thus, the message transmitted defines a modification for an engine algorithm, given the instructions in the message are used by system 36 to modify the engine algorithm. *Id.* at 45 (citing Ex. 1002 ¶ 233). Petitioner further shows that Parrillo similarly describes the use of a message to transmit software code updates for vehicle components. *Id.* at 45–46 (citing Ex. 1009, 5:16–19). Petitioner concludes, for example, that a person having ordinary skill in the art would have had reason to configure computer 12 to be operable to initiate transmission of the engine algorithm in the

combined Hapka-Parrillo system via a separate and distinct message that included the updated code to modify the currently executed and installed algorithm by engine control system 36. *Id.* at 46 (citing Ex. 1002 ¶ 234). We are persuaded by Petitioner’s showing and determine that the combined Hapka-Parrillo system teaches all of the elements of this limitation. Patent Owner does not dispute Petitioner’s showing with respect to the Hapka-Parrillo system meeting this limitation. *See generally* PO Resp.

Claim 1 further recites “a first mobile unit operable to receive the at least one discrete patch message, the first mobile unit further operable to create patched operating code by merging the at least one patch with current operating code located in the first mobile unit and to switch execution to the patched operating code.” We are persuaded by Petitioner’s showing that Hapka describes multiple mobile communications terminals (system 36 located on a fleet of vehicles), any one of which is a first mobile unit. *Id.* at 48 (citing Ex. 1002 ¶ 237). Petitioner explains, and we agree, that Hapka describes that system 36 on a given vehicle receives an update message, and that the combined teachings of Hapka and Parrillo suggest a system in which a discrete patch message would be received by system 36 (at least one discrete patch message). *Id.* Petitioner also provides persuasive reasons why a person having ordinary skill in the art would have understood that Hapka’s engine control system 36 was configured to incorporate the received information from computer 12 to modify the current algorithm executed by control system 36, which controls operations of engine 3. *Id.* at 49 (citing Ex. 1008, 3:65–4:4, 8:32–61; Ex. 1002 ¶ 238).

We also are persuaded by Petitioner’s showing that although Hapka does not explicitly disclose that the modification to the existing algorithm is

a partial update and not a wholesale replacement, it would have been obvious to a person having ordinary skill in the art, in light of Parrillo, to provide a patch to a portion of the engine algorithm code without replacing the algorithm stored and executed by control system 36. *Id.* at 50 (citing Ex. 1008, 3:65–4:4, 8:32–61; Ex. 1009, 4:60–64; Ex. 1002 ¶¶ 239–240). As explained above, we adopt Petitioner’s proposed construction of “merging the at least one patch with current operating code” to mean “incorporating the at least one patch into the current operating code, without replacing the entire current operating code.” Petitioner contends, and we agree, that a person having ordinary skill in the art would have been motivated to configure engine control system 36 such that the received software update code was merged with the existing software code executed and stored by control system 36 to allow new functionalities that a fleet manager intended for the target vehicle to be executed. *Id.* at 50 (citing Ex. 1002 ¶ 239). Petitioner further contends, and we are persuaded, that the combined teachings of Hapka and Parrillo suggest switching execution to the patched operating code, because a person having ordinary skill in the art would have found it obvious to configure the system such that engine control system 36 would execute the updated engine algorithm to provide the objects and goals disclosed by Hapka. *Id.* at 52 (citing Ex. 1008, 10:3–11; Ex. 1002 ¶ 242). Patent Owner does not dispute Petitioner’s showing with respect to the Hapka-Parrillo system meeting this limitation. *See generally* PO Resp.

Claim 1 further recites “a second mobile unit operable to receive the at least one discrete patch message, the second mobile unit further operable to create patched operating code by merging the at least one patch with current operating code located in the second mobile unit and to switch

execution to the patched operating code.” Petitioner’s showing for this limitation is similar to its showing for the claimed “first mobile unit.” *Id.* at 53–55 (citing Ex. 1008, 3:65–4:4, 8:32–61; Ex. 1009, 4:60–64; Ex. 1002 ¶¶ 244–245). Notwithstanding Patent Owner’s arguments regarding the “second mobile unit” in connection with the wherein limitation discussed below, we determine that Petitioner has shown by a preponderance of the evidence that Hapka describes a “second mobile unit” as follows.

Petitioner explains, and we agree, that Hapka describes multiple mobile communications terminals (system 36 located on a *fleet of vehicles*), any one of which is a first mobile unit and any other one of which is a second mobile unit that can receive and implement the algorithm modification. *See* Pet. 48 (citing Ex. 1002 ¶ 237); Pet. 53–54 (citing Ex. 1008, 4:54–56, 8:34–36; Ex. 1002 ¶ 245). We are further persuaded by Petitioner’s explanation that Hapka describes that system 36 on a given vehicle receives an update message, and that the combined teachings of Hapka and Parrillo suggests a discrete patch message that would be received by system 36 (at least one discrete patch message). Pet. 48 (citing Ex. 1002 ¶ 237); Pet. 54 (referring to the showing for “a first mobile unit”). Petitioner contends, and we agree, that a person having ordinary skill in the art would have understood from Hapka that engine control system 36 was configured to incorporate the received information from computer 12 to modify the current algorithm executed by control system 36, which controls operations of engine 3. *Id.* at 49 (citing Ex. 1008, 3:65–4:4, 8:32–61; Ex. 1002 ¶ 238); *see also* Pet. 53–55 (referring to the showing for a “first mobile unit”). Accordingly, we find that the combined Hapka-Parrillo system teaches a

second mobile unit that is also operable to perform the updating process the same way as the first mobile unit.

Claim 1 further recites the wherein limitation, namely “wherein the manager host is further operable to address the at least one discrete patch message such that the at least one discrete patch message is transmitted to the first mobile unit but not to the second mobile unit.” Petitioner contends that Hapka discloses that computer 12 (manager host) is operable to “address” the engine algorithm modification communication such that it is transmitted to engine control system 36 of the first vehicle but not to engine control 36 of a second vehicle, as Hapka’s fleet manager can transmit a message to “one or more vehicles in her fleet.” *Id.* at 55–56 (citing Ex. 1008, 8:33–38; Ex. 1002 ¶ 247). Petitioner further contends that, to the extent Hapka is found not to disclose that the manager host is operable to address the message as claimed, Parrillo discloses the claimed addressing element. *Id.* at 56–61 (citing Ex. 1009, 2:10–14, 2:22–31, 5:14–46; Ex. 1002 ¶¶ 249–256).

Patent Owner argues that Petitioner has failed to establish that the Hapka-Parrillo combination teaches “a manager host that is operable to send an update communication to a first mobile unit, but not a second mobile unit that is operable to create patched operating code using that very same communication update.” PO Resp. 6–8 (emphasis omitted); Sur-reply 5–9. In particular, Patent Owner argues that a vehicle that does not require the modification is thus a vehicle that is not operable to create patched operating code and cannot be the second mobile unit. *Id.*

As discussed above, Petitioner contends, and we agree, that the combined Hapka-Parrillo system meets the “second mobile unit.” Record

evidence supports Petitioner’s contention that Hapka describes a fleet of vehicles, and all vehicles include a mobile unit (e.g., the same engine control system 36 and its components) that operate in the same way as the example vehicle associated with Figures 1a and 1b, and the operations disclosed in connection with, for example, Figures 3, 4, and 5. Pet. 54 (citing Ex. 1002 ¶ 245 (citing Ex. 1008, 4:54–56, 8:34–36)). In support of its showing, Petitioner (and Dr. Bederson) rely on the description in Hapka that the fleet manager can “modify and control an engine algorithm, such as engine idling, *of one or more vehicles in her fleet.*” Ex. 1008, 8:34–38 (emphasis added). We agree with Petitioner that a person having ordinary skill in the art would have understood such description from Hapka to mean that the vehicles in the fleet must all have the same described control system 36, in order for the fleet manager to control an engine algorithm in more than one vehicle (“one or more vehicles in her fleet”). Stated another way, we are persuaded that a person having ordinary skill in the art would have understood Hapka to describe multiple mobile units that are *operable* in the same way *to receive the patch message* and also *operable to create patched operating code* so that operating code in the respective unit can be updated. Pet. 54; Reply 10–11; 1002, ¶ 245. Patent Owner has not directed us to anything in Hapka that would lead us to conclude that the mobile units in the fleet of vehicles are not identical and are not operable in the same ways.

Moreover, we are not persuaded by Patent Owner’s arguments that the Hapka-Parrillo system fails to meet the wherein limitation. PO Resp. 6–8; Sur-reply 5–9. Again, Hapka describes that the fleet manager can “modify and control an engine algorithm, such as engine idling, *of one or more*

vehicles in her fleet.” Ex. 1008, 8:34–38. Dr. Bederson testifies as follows with respect to that description:

By having a fleet of vehicles, but only sending a communication to system 36 of one vehicle, which modifies the engine algorithm executed by system 36 of that one vehicle, the computer 12 (“manager host”) is operable to direct engine algorithm update message to a first mobile unit (e.g., system 36 (including components 9 and 2) of a first vehicle in the fleet), as identified above for claim element 1(c), but not to a second mobile unit (e.g., system 36 (including components 9 and 2) of a second vehicle in the fleet), as identified above for claim element 1(d).)

Ex. 1002 ¶ 247; *see also* Pet. 55–56 (citing Ex. 1008, 8:33–38; Ex. 1002 ¶ 247). We give substantial weight to Dr. Bederson’s testimony because it is based on Hapka and how a person having ordinary skill in the art would have understood Hapka’s disclosure.

Patent Owner’s arguments are based on its proposed construction for the wherein limitation, which we reject as explained above. As stated above, there is no requirement in claim 1 that the second mobile unit has to be capable of creating patched operating code (e.g., cannot already be patched) at the time the same patch message is sent to the first mobile unit. PO Resp. 6–8; Sur-reply 2, 9. There is no timing requirement, as we explain above.

As Petitioner points out, the specification of the ’275 patent explains that the manager host can address a patch message to one of the mobile units, to all of the mobile units, or to a group of mobile units. Reply 7 (citing Ex. 1001, 3:39–41, 61–4:1, 5:14–24, 37–48). Hapka is similar, because it describes a manager host (computer 12) that can address a patch message to one or more vehicles in the fleet, e.g., where the message from the host can be transmitted to one mobile unit but not another mobile unit. Ex. 1005 ¶¶ 13, 26–28.

Accordingly, for the reasons given above, having considered Petitioner's and Patent Owner's arguments and evidence, we determine that Petitioner has shown by a preponderance of the evidence that claim 1 of the '275 patent would have been obvious over Hapka and Parrillo.

E. Remaining Ground Challenging Claim 1 of the '275 Patent

For the reasons discussed above, Petitioner has shown, by a preponderance of the evidence, that claim 1, the sole challenged claim, of the '275 patent is unpatentable as obvious over Hapka in view of Parrillo. In addressing this ground, we have addressed the challenged claim. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1359 (2108) (holding that a petitioner "is entitled to a final written decision addressing all of the claims it has challenged"); *see also* 35 U.S.C. § 318(a). Accordingly, we need not and do not decide whether Petitioner has shown by a preponderance of the evidence that claim 1 also would have been obvious based on Hapka in view of Parrillo and Wortham. *Cf. In re Gleave*, 560 F.3d 1331, 1338 (Fed. Cir. 2009) (not reaching other grounds of unpatentability after affirming the anticipation ground); *see also Beloit Corp. v. Valmet Oy*, 742 F.2d 1421, 1423 (Fed. Cir. 1984) (holding that once a dispositive issue is decided, there is no need to decide other issues).

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner has shown by a preponderance of the evidence that claim 1 of the '275 patent is unpatentable, as summarized in the following table:

Claim	35 U.S.C. §	References/Basis	Claim Shown Unpatentable	Claim(s) Not Shown Unpatentable
1	103	Hapka, Parrillo	1	
1	103 ¹²	Hapka, Parrillo, Wortham		
Overall Outcome			1	

IV. ORDER

Accordingly, it is:

ORDERED that claim 1 of the '275 patent has been shown to be unpatentable; and

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

¹² As explained immediately above, we need not and do not decide whether Petitioner has shown by a preponderance of the evidence that claim 1 also would have been obvious based on Hapka in view of Parrillo and Wortham.

IPR2018-01553
Patent 5,699,275

For PETITIONER:

Joseph Palys
Naveen Modi
Phillip Citroen
PAUL HASTINGS, LLP
josephpalys@paulhastings.com
naveenmodi@paulhastings.com
phillipcitraen@paulhastings.com

For PATENT OWNER:

Albert Deaver
Robert McAughan
Christopher Lonvick
MCAUGHAN DEAVER PLLC
adeaver@joneswalker.com
bmcaughan@yettercoleman.com
clonvick@yettercoleman.com

Jeffrey Andrews
YETTER COLEMAN LLP
jandrews@yettercoleman.com