

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.

IPR2018-01552¹
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 IPR2019-00110, 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 16, “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 IPR2018-01553. 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 18, 4. The ’275 patent also is the subject of Board proceedings IPR2018-01553 and IPR2019-00106. A Final Written Decision is made in each of IPR2018-01553 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, 26):

Claim Challenged	35 U.S.C. §	Reference(s)
1	102	Sugita ⁴
1	103	Sugita, Wortham ⁵
1	103	Ballard, ⁶ Shimizu ⁷

II. ANALYSIS

A. Principles of Law

To prevail in its challenge to Patent Owner’s claim, Petitioner must demonstrate by a preponderance of the evidence⁸ that the claim is unpatentable. 35 U.S.C. § 316(e) (2012); 37 C.F.R. § 42.1(d). To establish anticipation, each and every element in a claim, arranged as recited in the

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 JP Published Patent Application No. 1993-128022, published May 25, 1993 (Ex. 1005, “Sugita”).

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

⁶ Australian Patent Application No. 77395/91, published May 12, 1991 (Ex. 1006, “Ballard”).

⁷ JP Published Patent Application No. 05-66937, published Mar. 19, 1993 (Ex. 1007, “Shimizu”).

⁸ 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).

claim, must be found in a single prior art reference. *See Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008); *Karsten Mfg. Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1383 (Fed. Cir. 2001). Although the elements must be arranged or combined in the same way as in the claim, “the reference need not satisfy an *ipsissimis verbis* test,” i.e., identity of terminology is not required. *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009); *accord In re Bond*, 910 F.2d 831, 832 (Fed. Cir. 1990).

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence 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 for “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.” Dec. 5–6. 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. 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. 4–7; Sur-reply 2–10; 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. 6 (emphasis in original); *see also* Sur-reply 7 (“If the Second Mobile unit has already created patched operating code from the at least one patch message, the Second Mobile Unit is no longer capable of creating patched operating code from **the** at one patch message.” (emphasis in original)). 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. 7 (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. 6; Sur-reply 7. 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 Anticipation of Claim 1 over Sugita

Petitioner contends claim 1 is unpatentable under 35 U.S.C. § 102(a) and (b) as anticipated by Sugita. Pet. 3, 16–39. In support of its showing, Petitioner relies upon the declaration of Dr. Bederson. *Id.* (citing Ex. 1002).

1. Sugita

Sugita describes “a method for updating mobile communications terminals when updating software on each of a plurality of mobile communications terminals using wireless channels to perform communication.” Ex. 1005 ¶ 1.⁹ In particular, Sugita describes

⁹ Exhibit 1005 includes a certified English translation of Sugita and an affidavit from a translator attesting to the accuracy of the translation.

base station side (sending side) forwards the update information (all or part of the software) to each of the mobile communication terminals, first performing the forwarding based on the group ID of each group unit (addressed to all units or to units residing in specified groups), investigating the number of terminals in this group unit where updating by one round of forwarding has ended, and if the remaining unit number has become fewer, using individual IDs to perform updates of one unit at a time

Id. ¶ 13.

Figure 1 of Sugita is reproduced below.

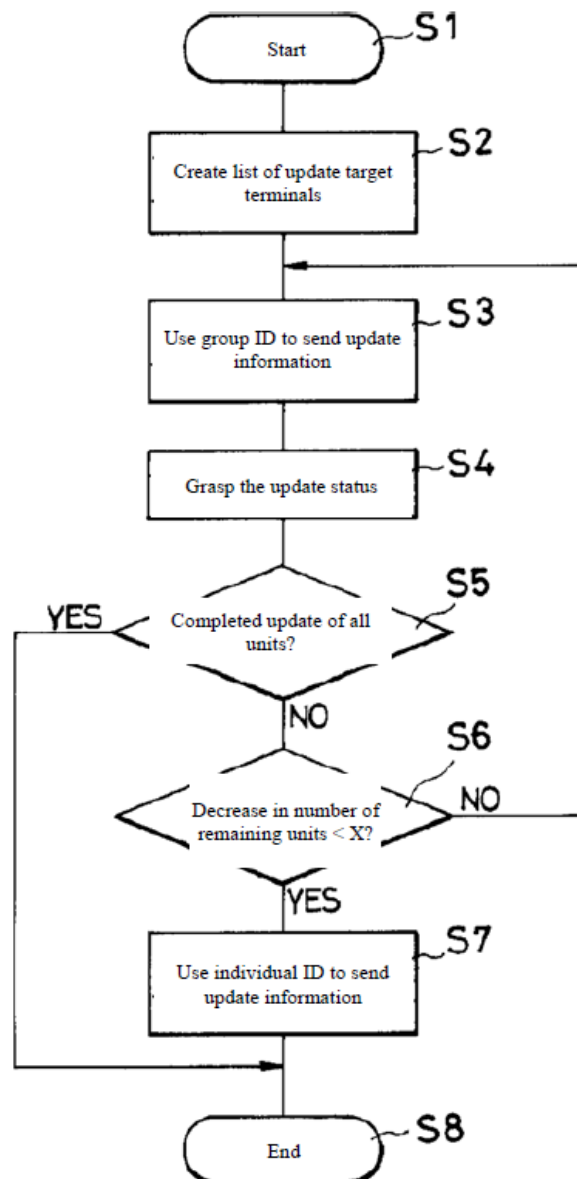


Figure 1 of Sugita shows the transmission process with multiple mobile units. As seen in Sugita's Figure 1, when the update process starts, there is a list of targeted mobile units that require an update. *Id.* ¶ 34. Once the targeted terminals are listed, their group ID is used in order to send the targeted terminals the update. *Id.* ¶¶ 35–37. If there are terminals that did not receive the update, then those terminals' individual IDs are used to send the update information to the terminal individually. *Id.* ¶¶ 38–39.

Figure 2 of Sugita is reproduced below.

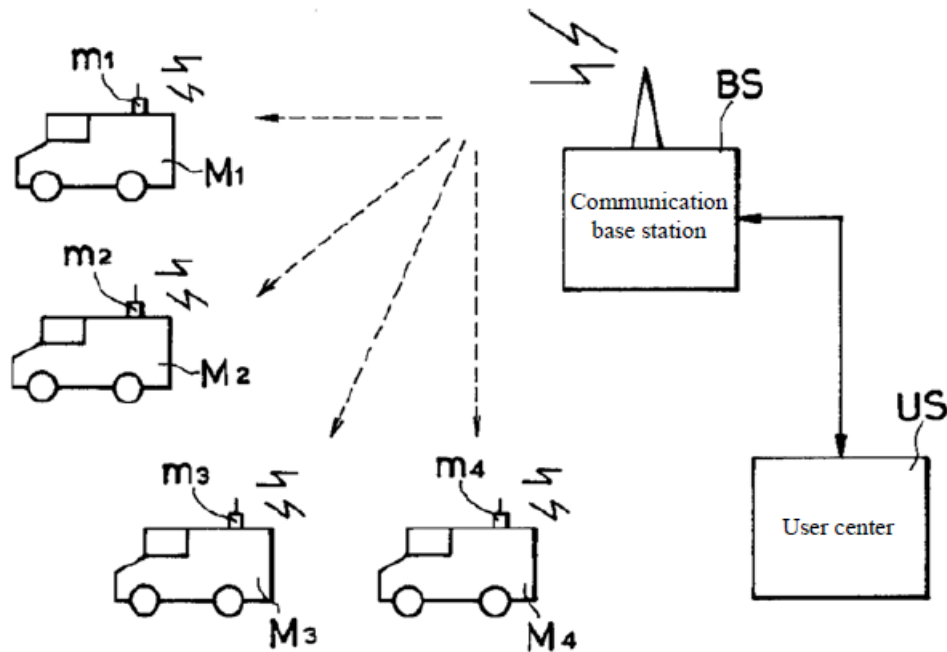


Figure 2 discloses a communication system with multiple communication terminals communicating with a base station. *Id.* ¶ 19. Sugita explains that “the software updates for these mobile communication terminals m1, m2, m3, m4, . . . are performed by using wireless channels to the base station BS.” *Id.* ¶ 20.

2. 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, Sugita meets the preamble. Pet. 17.¹⁰ Petitioner contends, and we agree, that Sugita’s description, with reference to Figure 2, that its system includes multiple mobile communication terminals m1, m2, m3, m4, which may be used for vehicle mounting in automobiles, meets the claim 1 preamble “mobile unit.” *Id.* at 17 (citing Ex. 1005 ¶ 19). We further agree with Petitioner’s contention that Sugita’s terminals communicate with base station BS using wireless channels for software updates. *Id.* at 17–18 (citing Ex. 1005 ¶ 20). We further determine that Petitioner has shown by a preponderance of the evidence that a person having ordinary skill in the art would have understood that Sugita’s mobile units are portable, capable of use while in motion, and necessarily battery-powered devices, because Sugita’s terminals are mounted on automobiles and have continuous operation while in motion. *Id.* at 18–20 (citing Ex. 1005 ¶¶ 4–6, 17, 19, Fig. 2; Ex. 1002 ¶¶ 69–72). Petitioner further contends, and we agree, that Sugita’s description that each mobile terminal includes a processor 11 and a RAM 15, where the software for processor 11 operates on RAM 15 (e.g., “terminal software”) meets the recited “operating code located in a mobile unit.” *Id.* at 20–21 (citing Ex. 1005 ¶¶ 11–14, 25; Ex. 1002 ¶ 73). Moreover, we agree with Petitioner’s contentions that Sugita’s description of updating terminal software (which can be all or part of the software)

¹⁰ We need not resolve the issue of whether the preamble is limiting because, regardless of whether the preamble is limiting, Petitioner shows that Sugita meets the preamble.

performed by wireless channels from the base station meets “patching of operating code,” as recited in claim 1. *Id.* at 22–23 (citing Ex. 1005 ¶¶ 12, 13, 17, 19, 20, 22, 25, 35; Ex. 1002 ¶¶ 74–76).

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 are persuaded, that Sugita’s base station capable of initiating transmission of software update information through a wireless network meets the “manager host” limitation. *Id.* at 23–26 (citing Ex. 1005 ¶¶ 13, 28, 30, 33, 36, 41, 47, Fig. 6; Ex. 1002 ¶¶ 79–81). Petitioner has shown by a preponderance of the evidence that Sugita’s base station is operable to initiate transmission of software updates because Sugita describes that the base station side is the sending side that forwards the update information to the terminals. *Id.* at 26–27 (citing Ex. 1005 ¶¶ 13, 25, 28; Ex. 1002 ¶¶ 82–85). Petitioner further contends, and we agree, that Sugita discloses that the base station is operable to initiate transmission of at least one discrete patch message defining at least one patch. *Id.* at 29–30 (citing Ex. 1005 ¶¶ 8, 13, 19, 20, Fig. 2; Ex. 1002 ¶¶ 86–87). For example, Petitioner explains that a person having ordinary skill in the art would have understood that Sugita’s described software update is used for patching operating code. *Id.*

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 agree with Petitioner’s showing that Sugita describes multiple mobile communications terminals, any one of which is a

first mobile unit that can receive a software update packet and update the software program where the software update is the “one discrete patch message” transmitted by the manager host. *See* Pet. 31–34 (citing Ex. 1005 ¶¶ 28, 36, 43–48, Figs. 4, 6; Ex. 1002 ¶¶ 90–91). 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.” Thus, as Petitioner explains, Sugita’s mobile units consisting of software for a processor to operate on a RAM that can receive software update information, which is then incorporated into the existing operating software code, meets this limitation. *Id.* at 32–34 (citing Ex. 1005 ¶¶ 43–48, Fig. 6; Ex. 1002 ¶¶ 92–96); *see also* Ex. 1002 ¶ 97. Moreover, Petitioner has shown by a preponderance of the evidence that a person having ordinary skill in the art would have understood that following the software update, the processor stops executing the non-updated software program and begins executing the updated software program. *Id.* at 35 (citing Ex. 1005 ¶¶ 13, 25, 46, Fig. 3; Ex. 1002 ¶¶ 23–28, 31, 32, 45–48, 97).

Patent Owner does not dispute Petitioner’s showing with respect to Sugita meeting the claim elements discussed above. *See generally* PO Resp.

Claim 1 further recites a “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.” Pet. 36 (citing Ex. 1005 ¶¶ 11–15, 17, 19–21, 27–28, 43–47, Figs. 2, 3, 6; Ex.

1002 ¶¶ 98–99). 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 Sugita describes a “second mobile unit” as follows.

Petitioner explains, and we agree, that Sugita describes multiple mobile communications terminals, any one of which is a first mobile unit and any other one of which is a second mobile unit, which can receive a software update packet and update the software program where the software update is the “one discrete patch message” transmitted by the manager host. *See* Pet. 31–34 (citing Ex. 1005 ¶¶ 28, 36, 43–48, Figs. 4, 6; Ex. 1002 ¶¶ 90–91). We agree with Petitioner that Sugita discloses that each mobile terminal operates like the first mobile unit, which creates patched operating code from the patch message sent from the manager host. Ex. 1005 ¶¶ 43–47. Accordingly, we find that Sugita discloses a second mobile unit that is operable to perform the updating process the same way as the first mobile unit, because Sugita discloses multiple mobile communication terminals.

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 Sugita discloses this limitation in at least two ways. In the first way, Petitioner contends that Sugita discloses that the base station (manager host) may send one or more packet(s) of software updates addressed to all terminal units or units residing in specified groups. Pet. 37 (citing Ex. 1005 ¶¶ 13, 34–39). Petitioner contends that the base station transmits update packets based on an update target list created by the base station and IDs

before beginning transmission such that only terminals in specific groups receive software updates, while terminals not in the specific groups do not receive the software updates. Pet. 37–38 (citing Ex. 1005 ¶¶ 13, 34–39; Ex. 1002 ¶¶ 101–102). Petitioner explains that the base station (manager host) transmits update packets based on an update target list created by the base station and IDs before beginning transmission. Pet. 38 (citing Ex. 1005 ¶¶ 34–39, 43–47).

Patent Owner argues that Petitioner has failed to show that the first way, i.e., Sugita’s group unit embodiment, meets the wherein limitation. PO Resp. 7–16. Patent Owner argues that Sugita discloses only transmitting a patch message to all mobile terminals that are capable of being updated and that a group update is sent by the base station to all mobile terminals. *Id.* We are not persuaded by such arguments, because they are not based on record evidence.

We first address Patent Owner’s argument that Dr. Bederson’s “testimony is incompetent” regarding what is described at paragraph 13 of Sugita. *Id.* at 14–15. Patent Owner’s argument is based on the assertion that Dr. Bederson’s testimony (Ex. 1002 ¶ 101) is based on Microsoft Corporation’s¹¹ translated version of Sugita, and not based on Petitioner’s translated version. This argument has no merit, because Dr. Bederson’s testimony at paragraph 101 of his declaration is clearly based on Petitioner’s translated version of Sugita. *Compare* Ex. 1005 ¶ 13, *with* Ex. 1002 ¶ 101. As such, we are not persuaded that Dr. Bederson’s “testimony is incompetent.”

¹¹ Microsoft Corporation is the petitioner in related IPR2019-00106.

We further give substantial weight to Dr. Bederson's testimony that "only terminals in specific groups, where one of them being the 'first mobile unit,' receive packets of software updates ('at least one discrete patch message'), while terminals not in these specific groups, where one of them being the 'second mobile unit,' do not receive the software updates." Ex. 1002 ¶ 101. His testimony is supported by record evidence. Ex. 1005 ¶ 13. The relevant portion of paragraph 13 of Sugita is reproduced as follows:

[T]he base station side (sending side) forwards the update information (all or part of the software) to each of the mobile communication terminals, first performing the forwarding based on the group ID of each group unit (*addressed to all units or to units residing in specified groups*), investigating the number of terminals in this group unit where updating by one round of forwarding has ended, and if the remaining unit number has become fewer, using individual IDs to perform updates of one unit at a time. With this method, highly efficient updating is enabled.

Id. (emphasis added). Sugita describes sending update information to each of the mobile communication terminals by first performing the forwarding based on the group ID of each group unit. *Id.* The forwarding of the update information is addressed to all units or to units residing in specified groups. *Id.* We agree with Petitioner's position, which is supported by Dr. Bederson's testimony, that terminals in specified groups receive the update, while those that are not in specified groups do not receive the update. Pet. 37–38 (citing Ex. 1002 ¶ 101). Patent Owner's attorney argument that the same Sugita description makes clear that Sugita forwards the update information to all mobile terminals (*see, e.g.*, PO Resp. 15) does not rebut sufficiently Petitioner's showing, which we determine is supported by the preponderance of the evidence. Ex. 1002 ¶ 101; Ex. 1005 ¶ 13.

We further are not persuaded by Patent Owner's argument that to the extent Sugita describes not sending update information to a mobile communication terminal, Petitioner fails to show that such an "excluded" terminal was operable to update current operating software with the update information, as required by claim 1. PO Resp. 16. We agree with Petitioner that Sugita describes updating its terminals by grouping them and that the base station uses a group ID to target and transmit a patch message to one group unit separate from a different group unit with a different group ID to avoid the problem identified by Sugita of overloading the network. Pet. Reply 11–12 (citing Ex. 1005 ¶¶ 4, 9, 11, 12). Petitioner explains, and we agree, that although Sugita's base station is operable to address and transmit the same patch update to all mobile units, the base station does so in groups such that a mobile unit that has not yet been addressed by the base station is a second mobile unit as claimed. *Id.* at 12 (citing Pet. 37–38; Ex. 1002 ¶¶ 101–102; Ex. 1005 ¶¶ 4, 9, 11, 12). Patent Owner's apparent assertion that in Sugita, the base station sends the message to all of the mobile units at the same time is in contrast to what Sugita actually describes. Ex. 1005 ¶¶ 4, 9–13. For all of the above reasons, Petitioner has shown by a preponderance of the evidence that Sugita's group ID embodiment meets the wherein limitation.

In the second way that Petitioner alleges Sugita discloses the wherein limitation, Petitioner relies on Sugita's use of individual IDs for updating individual terminals. Pet. 38–39 (citing Ex. 1005 ¶¶ 13, 17, 26–28, 37, 41, Fig. 1). Petitioner contends that because software updates are forwarded to one terminal at a time, in a one-to-one update process, Sugita discloses that the base station is operable to address one or more update packets such that

the update packet(s) is transmitted to a first terminal that is addressed using its individual ID but not a second terminal. *Id.* at 38–39 (citing Ex. 1002 ¶¶ 103–105). Petitioner further argues that Sugita describes a manager host operable to decide which specific mobile unit to send the patch message to before beginning transmission because the base station transmits update packets based on an update target list created by the base station and IDs before beginning transmission. *Id.* at 39 (citing Ex. 1005, Fig. 1, ¶¶ 34–39, 43–47; Ex. 1002 ¶¶ 23–29, 31–32, 45–48, 104–105).

Patent Owner argues, with respect to Sugita’s individual ID description, that Petitioner does not carry its burden to show that the manager host is operable to “decide” which specific mobile unit to send the patch message to when relying on Sugita’s “targeted list” because Sugita does not disclose how the terminals are targeted. PO Resp. 16–19; Sur-reply 11–12. Patent Owner also argues that Sugita’s “target list” embodiment does not meet the “second mobile unit” because a mobile unit that has already been updated with a patch is no longer capable of creating patched operating code from the patch message. PO Resp. 16–19; Sur-reply 6–7, 11–12.

As explained above in the claim construction section, there is nothing in the language of claim 1 that precludes sending an update to both mobile units, followed by sending an update to only one mobile unit. Claim 14, which depends from claim 1, contemplates exactly that. As further explained above, 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. There are no timing requirements for the *apparatus* claim 1 as Patent Owner argues.

Sugita describes using individual IDs to perform updates one unit at a time. Ex. 1005 ¶¶ 13, 34–39. Sugita describes determining, after sending the update to a group of terminals, whether there are non-update communications terminals remaining and uses individual IDs to send the update information to the remaining terminals. *Id.* We agree with Petitioner and find that updating an individual terminal meets the wherein limitation, because although the individual terminal is updated, a terminal that is not on the list, such as one that was successfully updated previously, meets the second mobile unit and wherein limitation. Pet. Reply 5–6, 13–15; *see also* Pet. 38–39 (citing Ex. 1005 ¶¶ 13, 17, 26–28, 34–39, 41, 43–47, Fig. 1; Ex. 1002 ¶¶ 103–105). For all of the above reasons, Petitioner has shown by a preponderance of the evidence that Sugita’s individual ID embodiment meets the wherein limitation.

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 is anticipated by Sugita.

E. Asserted Obviousness of Claim 1 over Ballard and Shimizu

Petitioner contends claim 1 is unpatentable under 35 U.S.C. § 103(a) as obvious over Ballard in view of Shimizu. Pet. 45–70. In support of its showing, Petitioner relies upon the declaration of Dr. Bederson. *Id.* (citing Ex. 1002).

1. *Ballard*

Ballard describes “a software downloading device for telecommunications terminal, such as a mobile radiophone for cellular network, cordless phone or fixed terminal in an integrated services digital network.” Ex. 1006, 2:1–3.¹² In particular, Ballard describes that

[t]he software program executed by each of these terminals must be able to evolve with time in order to: either correct software anomalies, improve the terminal operation, provide new services to subscribers, follow the changes made to telecommunication network technical specifications, or be matched to various networks where different software programs need to be executed, when a terminal is moved to another country for instance.

Id. at 2:6–11. Ballard describes that general broadcast can be used to simultaneously update software to an entire fleet of radiophones or point-to-point transmission can be used to download in a specific radiophone entering an area serviced by a network requiring execution of operating software not yet stored in one of the radiophone RAMs. *Id.* at 6:31–34.

2. *Shimizu*

Shimizu describes a data processing device and process modification method. Ex. 1007, code (54). Data to be modified for the processing sequence of a data process is received by a wireless communications means. *Id.* at code (57). Shimizu further describes segmenting a patch command into multiple patch commands and transmitting the segmented patch commands. *Id.* ¶ 21. Shimizu describes that the patch address ADR is the address of the portion where the patch data was entered into the program and

¹² Line citations are to those annotated in red on the right-hand side of the respective cited page.

that the patch data DATA is the patch data constituting the revised portion of the program. *Id.*

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, Ballard meets the preamble. Pet. 45.¹³ Petitioner contends, and we are persuaded, that Ballard describes “operating code located in a mobile unit,” because Ballard describes a software program, such as operating software (“operating code”) that is executed by a telecommunications terminal, such as a mobile radiophone (“mobile unit”), where the software is saved in a RAM of the radiophone. Pet. 46 (citing Ex. 1006, 2:1–5, 2:19–24, 3:24–30). Petitioner further contends, and we agree, that Ballard’s description of upgrading operating terminal software, as opposed to entirely replacing the software, meets “patching” of operating code. *Id.* at 48 (citing Ex. 1006, 2:6–11, 5:4–7, 5:23–24; Ex. 1002 ¶ 135). Petitioner asserts, and we find, that Ballard discloses that patching of operating code is conducted remotely, because Ballard’s goal is to eliminate the requirement of physically replacing the memory where the operating software is stored and it does so by using a telecommunication network to download updates. *Id.* at 48–49 (citing Ex. 1006, 2:6–24, 3:24–31, 4:20–22, Fig. 1; Ex. 1002 ¶ 136).

Claim 1 further recites “a manager host operable to initiate transmission through a wireless communication network of at least one

¹³ We need not resolve the issue of whether the preamble is limiting because, regardless of whether the preamble is limiting, Petitioner shows that Ballard meets the preamble.

discrete patch message defining at least one patch.” Petitioner contends, and we are persuaded, that Ballard in view of Shimizu describes this limitation. In particular, Petitioner shows, by a preponderance of the evidence, that Ballard’s base station is linked to a terminal using a “radiotelephone network” and a person having ordinary skill in the art would have understood that the network is thus a wireless communication network. *Id.* at 50–51 (citing Ex. 1006, 3:24–31; Ex. 1002 ¶ 139). Petitioner contends, and we are persuaded, that Ballard’s base station or network, or a combination of the two, meets the claimed “manager host” operable to transmit software updates through the wireless communication network. *Id.* at 51–52 (citing Ex. 1006, 4:17–19, 4:32–34, 5:1–9; Ex. 1002 ¶¶ 140–141). Petitioner further avers, and we agree, that Ballard describes downloading software updates that may be “called into execution . . . by a message supplied by [the network],” as opposed to by a user’s command from the terminal, and thus meets the “initiate[s] transmission” limitation. *Id.* at 53–55 (citing Ex. 1006, 4:17–19, 5:1–9, 7:23–25; Ex. 1002 ¶¶ 142–146; Ex. 1024, Chapter 2; Ex. 1025, 77–79). We agree with Petitioner’s showing, as explained above with respect to the preamble, that Ballard describes patching of operating code and transmission of at least one patch.

Petitioner relies on Shimizu to meet the “at least one discrete patch message defining at least one patch” of claim 1. *Id.* at 56. Petitioner explains how Shimizu is similar to Ballard in that it describes a remote software patching process and system. *Id.* at 57. In particular, Petitioner explains how Shimizu describes that a patch may be inserted into a software (load) module stored in a memory to modify the module. *Id.* at 57 (citing Ex. 1007 ¶ 7). We agree with Petitioner that Shimizu describes updating

software by a wireless communications means to allow updating software. *Id.* at 59 (citing Ex. 1007 ¶ 7). Petitioner further contends, and we agree, that Shimizu describes that a patch file may be transmitted as a single entity or in multiple segments, i.e., patch commands. *Id.* at 58 (citing Ex. 1007 ¶¶ 21–22). Petitioner shows, by a preponderance of the evidence, that a person having ordinary skill in the art would have recognized that Shimizu discloses “transmission . . . of at least one discrete patch message defining at least one patch,” as it discloses transmission of one or more patch messages that collectively represent a single patch file. *Id.* (citing Ex. 1002 ¶ 156).

In addition, Petitioner provides reasons to combine Ballard and Shimizu. For example, Petitioner explains that given that errors or interruption may occur during patch transmissions, a person having ordinary skill in the art would have been motivated to implement a patch transmission process, similar to that of Shimizu, by using hash values to ensure that transmissions of patches are properly completed. *Id.* at 59 (citing Ex. 1002 ¶ 158). As another example, Petitioner further contends that a person having ordinary skill in the art would have recognized that the features of dividing a patch file into multiple small patch messages would have enabled Ballard to transmit a large patch file in multiple smaller patch messages, particularly when the bandwidth, speed, and reliability of the wireless communication network at the time of the alleged invention was limited. *Id.* at 60 (citing Ex. 1002 ¶¶ 160–161). We agree with Petitioner’s showing and determine that Ballard in view of Shimizu teach all the elements of “a manager host operable to initiate transmission through a wireless communication network of at least one discrete patch message defining at least one patch” and that it

would have been obvious to combine Ballard with Shimizu for the reasons Petitioner provides.

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.” Petitioner explains, and we agree, that Ballard discloses the first mobile unit as the telecommunication terminal. *Id.* at 62–63 (citing Ex. 1006, 2:1–11, 4:31–32). Petitioner relies on the combined teachings of Ballard and Shimizu for meeting the requirement that the mobile unit is operable to receive the at least one discrete patch message. *Id.* at 63–64 (citing Ex. 1002 ¶¶ 168–170).

Petitioner shows, by a preponderance of the evidence, that the combination of Ballard and Shimizu describes that the first mobile unit is operable to create patched operating code by merging the at least one patch with current operating code located in the first mobile unit. *Id.* at 64 (citing Ex. 1002 ¶¶ 168–170). As Petitioner provides, and we agree, Ballard discloses that its system includes two RAMs (1) and (2) and each of the RAMs may contain a different operating software program. Ex. 1006, 3:7–10, 3:24–26. Ballard describes that software upgrades are downloaded to one of its two RAMs, for example, RAM (1). *Id.* at 3:7–10, 4:6–9. Petitioner shows, by a preponderance of the evidence, that a person having ordinary skill in the art would have understood that the patch is incorporated into the existing operating software in RAM to create an updated operating software (patched operating code). Pet. 65 (citing Ex. 1002 ¶ 172). Petitioner further contends, and we are persuaded, that the combined

disclosures of Ballard and Shimizu teach that the first mobile unit is operable to switch execution to the patched operating code, because Ballard discloses that one of the two RAMs of the terminal may be selected to execute one of the software programs thereon stored. *Id.* at 66 (citing Ex. 1006, 3:7–10, 4:6–9, 4:20–22; Ex. 1002 ¶ 176).

Patent Owner does not dispute Petitioner’s showing with respect to Ballard and Shimizu meeting the claim elements discussed above or Petitioner’s reasons for combining the references. *See generally* PO Resp. 21–23.

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.” 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 Ballard describes a “second mobile unit” as claimed. In particular, we are persuaded by Petitioner’s explanation, and adopt it as our own, that in the proposed Ballard-Shimizu system, multiple terminals may receive the software updates. Pet. 67–68 (citing Ex. 1006, 5:21–23, 4:27–30; Ex. 1002 ¶ 179).

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.” Although Petitioner contends that the combination of Ballard and Shimizu discloses this limitation in two ways, for purposes of this decision, we focus on the second way. *Id.* at 68–70. In the second way, Petitioner contends, and we agree, that Ballard discloses using point-to-point transmission, rather than a general broadcast, to provide software updates to a specific radiophone. *Id.* at 69 (citing Ex. 1006, 4:27–34). Petitioner contends, with supporting evidence, that the Ballard-Shimizu system teaches that the manager host is operable to transmit a patch message including a software patch to a specific terminal (e.g., a first mobile unit) and not to another (e.g., a second mobile unit). *Id.* (citing Ex. 1002 ¶ 184). Petitioner shows, by a preponderance of the evidence, that a person having ordinary skill in the art would have recognized that the manager host of the Ballard-Shimizu system must decide whether to send software updates to the specific terminal(s) before beginning transmission. *Id.* at 69–70 (citing Ex. 1006, 4:27–34, 5:1–7; Ex. 1002 ¶ 185). Lastly, Petitioner contends, with sufficient supporting evidence, that a person having ordinary skill in the art would have understood that when two terminals enter a new zone, the manager host must decide where to send software updates based on versions of terminals, as one of the terminals (second mobile unit) may have already downloaded the software update, while the other terminal (first mobile unit) has not. *Id.* at 70 (citing Ex. 1006, 3:11–15; Ex. 1002 ¶¶ 186–189).

Regarding Petitioner’s assertions with respect to the second way, Patent Owner argues that the Ballard-Shimizu combination does not teach “updating a first mobile unit, but not a second mobile unit,” as Petitioner contends. PO Resp. 21; Sur-reply 6, 12. In particular, Patent Owner argues

that the second mobile unit “must be operable to create ‘patched operating code’” and that “a mobile unit that has already created patched code (because it has already received ‘the at least one patch’)” does not meet the “second mobile unit” claim 1 language. PO Resp. 21–22; Sur-reply 3. For reasons discussed above in the claim construction section regarding the scope of claim 1, we are not persuaded by these arguments. As explained, claim 1 does not preclude a second mobile unit that has already created patched operating code from the at least one patch message from meeting the “second mobile unit,” as Patent Owner argues. For all of the above reasons, Petitioner has shown by a preponderance of the evidence that the Ballard-Shimizu system’s point-to-point transmission embodiment meets the wherein limitation.

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 Ballard and Shimizu.

F. 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 anticipated by Sugita and also as obvious over Ballard in view of Shimizu. In addressing these grounds, 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 Sugita in view of Wortham. *Cf. In re Gleave*, 560 F.3d at 1338 (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. §	Reference(s)	Claim Shown Unpatentable	Claim(s) Not Shown Unpatentable
1	102	Sugita	1	
1	103 ¹⁴	Sugita, Wortham		
1	103	Ballard, Shimizu	1	
Overall Outcome			1	

¹⁴ 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 Sugita in view of Wortham.

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.

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