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Paper 45
Date: May 11, 2020

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GREE, INC.,
Petitioner,

v.

SUPERCELL OY,
Patent Owner.

IPR2019-00083
Patent 9,104,520 B2

Before STACEY G. WHITE, DANIEL J. GALLIGAN, and JOHN R. KENNY, *Administrative Patent Judges.*

GALLIGAN, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
Denying-in-Part and Dismissing-in-Part Patent Owner's
Contingent Motion to Amend
Dismissing Patent Owner's Motion to Exclude
35 U.S.C. § 318(a)

I. INTRODUCTION

In this *inter partes* review, GREE, Inc. ("Petitioner") challenges the patentability of claims 1–8, 10–16, and 18–20 of U.S. Patent No. 9,104,520 B2 ("the '520 patent," Ex. 1001), which is assigned to Supercell Oy ("Patent Owner").

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision, issued pursuant to 35 U.S.C. § 318(a), addresses issues and arguments raised during the trial in this *inter partes* review. For the reasons discussed below, we determine that Petitioner has proven by a preponderance of the evidence that claims 1–8, 10–16, and 18–20 of the '520 patent are unpatentable. *See* 35 U.S.C. § 316(e) (2012) ("In an inter partes review instituted under this chapter, the petitioner shall have the burden of proving a proposition of unpatentability by a preponderance of the evidence."). We also determine that Patent Owner's proposed substitute claims 21–28, 30–36, and 38–40 are unpatentable, and, therefore, we deny Patent Owner's Contingent Motion to Amend as to these claims. We dismiss Patent Owner's Contingent Motion to Amend as to claims 29 and 37 because claims 9 and 17, for which claims 29 and 37 are proposed as substitutes, are not challenged in this *inter partes* review.

A. Procedural History

On October 12, 2018, Petitioner requested *inter partes* review of claims 1–8, 10–16, and 18–20 of the '520 patent on the following grounds:

Claims Challenged	35 U.S.C. §[1]	Reference(s)/Basis
1, 7, 8, 10, 15, 16, 18	103	Waldmann,[2] Schuelein,[3] Applicant Admitted Prior Art ("APA" or "AAPA")[4]
6, 14, 19, 20	103	Waldmann, Schuelein, AAPA, ZIP Format[5]
2–5, 11–13	103	Waldmann, Schuelein, AAPA, O'Neill[6]

Paper 1 ("Pet."), 8. Patent Owner filed a Preliminary Response. Paper 8 ("Prelim. Resp."). We instituted trial on all grounds of unpatentability. Paper 9 ("Dec. on Inst."), 39.

During the trial, Patent Owner filed a Response (Paper 19, "PO Resp."), Petitioner filed a Reply (Paper 25, "Pet. Reply"), and Patent Owner filed a Sur-reply (Paper 29, "PO Sur-reply"). Patent Owner also filed a Contingent Motion to Amend (Paper 20, "Motion to Amend"), Petitioner filed an Opposition to Patent Owner's Contingent Motion to Amend (Paper 26, "Opp. Amend"), Patent Owner filed a Reply to Petitioner's Opposition (Paper 30, "Reply Amend"), and Petitioner filed a Sur-reply to Patent Owner's Reply (Paper 36, "Sur-reply Amend").

[1] The Leahy-Smith America Invents Act ("AIA") included revisions to 35 U.S.C. § 103 that became effective before the filing of the application for the '520 patent. Therefore, we apply the post-AIA version of this section.
[2] WO 2007/020300 A2, published Feb. 22, 2007 (Ex. 1004).
[3] US 2006/0271925 A1, published Nov. 30, 2006 (Ex. 1005).
[4] Certain disclosures in "Background of the Invention" section of the '520 patent (Ex. 1001), as identified by Petitioner. *See* Pet. 16–18, 36–63.
[5] .ZIP File Format Specification (v6.3.0), revised Sept. 29, 2006 (Ex. 1006).
[6] US 6,832,373 B2, issued Dec. 14, 2004 (Ex. 1009).

Patent Owner filed a Motion to Exclude (Paper 37), to which Petitioner filed an Opposition (Paper 38), and in support of which Patent Owner filed a Reply (Paper 39).

An oral hearing was held on February 19, 2020, a transcript of which appears in the record. Paper 41 ("Tr.").

B. Related Matters

The parties state that the '520 patent is at issue in *Supercell Oy v. GREE, Inc. et al*, No. 4:17-cv-05556-YGR (N.D. Cal.). Pet. 1; Paper 4, 1–2.

C. Real Parties in Interest

Each party identifies itself as the real party in interest. Pet. 1; Paper 4, 1.

D. The '520 Patent and Illustrative Claim

The '520 patent generally relates to upgrading an application. Ex. 1001, code (57), 1:15–17. As background, the '520 patent explains that the installation package of an application has a data portion and a customized information portion. Ex. 1001, 1:42–43. According to the '520 patent,

> the same version of application may have different installation packages with the same data portion and different customized information portions. Accordingly, once the application is to be upgraded to a higher version, many patch packages with different customized information are needed. For example, when the application has 100 release channels, e.g. an official channel, an IE and a 360 browser and etc., 100 different patch packages with the same data portion needs to be provided, which results in heavy workload for developers.

Ex. 1001, 1:47–56. To address this purported problem, the '520 patent proposes applying a patch package to the data portion of a current

installation package and then adding the customized information portion from the current installation package to the newly generated data portion to obtain a new installation package. Ex. 1001, 2:4–16.

Of the challenged claims, claims 1, 10, and 18 are independent. Claim 1 is illustrative and is reproduced below.

> 1. A method for upgrading an application, comprising:
> obtaining a patch package corresponding to a current installation package of an application;
> removing a customized information portion from the current installation package and obtaining a data portion of the current installation package;
> generating a data portion of a new installation package according to the patch package and the data portion of the current installation package;
> obtaining the new installation package by adding the customized information portion to the data portion of the new installation package; and
> installing the new installation package.

II. ANALYSIS

A. Level of Ordinary Skill in the Art

Citing the testimony of its declarant, Dr. Paul Clark, Petitioner asserts that a "person of ordinary skill in the art of the '520 patent would have either an undergraduate, graduate, or doctoral degree in computer science (or a similar field, *e.g.*, electrical engineering, *etc.*), or three to five years' industry experience in the general field of software engineering and application development." Pet. 21 (citing Ex. 1003 ¶ 8).

In our Institution Decision, we provided a preliminary assessment of the level of skill in the art as that of "an individual (i) with an undergraduate degree in computer science or electrical engineering or (ii) with any

undergraduate degree plus three to five years' experience as an application developer or software engineer." Dec. on Inst. 13 (citing Ex. 1003 ¶ 8; Ex. 2001 ¶ 26). In its Response, Patent Owner agrees with this preliminary assessment. *See* PO Resp. 12 (arguing that a person of skill in the art "would have an undergraduate degree in computer science or electrical engineering, or have an undergraduate college degree in another discipline plus three to five years' industry experience in the general field of software engineering and application development"). During the trial, Petitioner did not further address the level of skill in the art. *See generally* Pet. Reply.

Based on the record developed during trial, we adopt our preliminary assessment of the level of ordinary skill in the art from the Institution Decision. *See* Dec. on Inst. 13; PO Resp. 12; Ex. 1003 ¶ 8; Ex. 2001 ¶ 26; Ex. 2019 ¶ 28.

B. Claim Interpretation

In an *inter partes* review for a petition filed before November 13, 2018, a claim in an unexpired patent shall be given its broadest reasonable construction in light of the Specification of the patent in which it appears. 37 C.F.R. § 42.100(b) (2018); *see* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340 (Oct. 11, 2018) (amending 37 C.F.R. § 42.100(b) effective November 13, 2018) (now codified at 37 C.F.R. § 42.100(b) (2019)). The Petition was accorded a filing date of October 12, 2018, and, therefore, the broadest reasonable interpretation standard for claim interpretation applies. *See* Paper 5 (Notice of Filing Date Accorded to Petition).

In applying a broadest reasonable interpretation, claim terms generally are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). This presumption may be rebutted when a patentee, acting as a lexicographer, sets forth an alternate definition of a term in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). Furthermore, only terms that are in controversy need to be construed, and only to the extent necessary to resolve the controversy. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

1. Customized Information Portion

The challenged independent claims and the proposed substitute independent claims all recite "a customized information portion." Patent Owner argues that "[t]he term 'customized information portion' is defined in the specification as comprising 'at least one of a release channel of the application, a network traffic tip, an update mode or a link to the release channel.'" PO Resp. 13 (citing Ex. 1001, 4:10–12; Ex. 2019 ¶ 52). According to Patent Owner, "the specification of the '520 defines the customized information portion and identifies a list of items, at least one of which must be included in the customized information portion." PO Sur-reply 5–6. Petitioner contends that these four types of information are examples of customized information and that the specification of the '520 patent identifies other types of customized information. Pet. Reply 2–3 (citing Ex. 1001, 6:14–30, 9:10–13).

We agree with Petitioner. The claims themselves do not define "customized information portion." Thus, we turn to the '520 patent specification, which states the following: "*In an example* of the present invention, the customized information portion comprises at least one of a release channel of the application, a network traffic tip, an update mode or a link to the release channel." Ex. 1001, 9:10–13 (emphasis added). Therefore, the disclosed customized information portion that has at least one of those four categories of information is merely exemplary.

Another passage of '520 patent, cited by Patent Owner, provides the same description without expressly disclosing its exemplary nature, reading: "[t]he customized information portion comprises at least one of a release channel of the application, a network traffic tip, an update mode or a link to the release channel." Ex. 1001, 4:10–12; PO Resp. 13; PO Sur-reply 5. In context, however, that description is also exemplary, as it describes the customized information portion in block 102 of Figure 1 of the '520 patent as "an embodiment of the present invention." Ex. 1001, 3:56–63, 4:8–12. And the '520 patent emphasizes that the description of its disclosed embodiments "is only preferred examples of the present invention and is not used to limit the protection scope of the present invention." Ex. 1001, 9:58–60. The '520 patent does not provide a limiting definition for "customized information portion."

Furthermore, the '520 patent identifies more types of "customized information" than those recited in Patent Owner's construction: "According to FIG. 4, customized information included in the extension field includes: a[Message-Digest Algorithm 5 ('md5')] value of the apk file ('apk md5'), a release channel ('channelId'), a device type ('profile device type'), an

update mode ('update mode'), a build version ('build version'), and an address of a market ('market url')." Ex. 1001, 6:20–25. We have no basis under the broadest reasonable construction standard to limit the customized information portion of the challenged claims to that which contains at least one of the categories of customized information included in Patent Owner's proposed construction.

No further construction is necessary to resolve the dispute before us. We further note that, as explained below, the asserted prior art teaches "a customized information portion" under Patent Owner's proposed construction.

2. Removing

Claim 1 recites "removing a customized information portion from the current installation package and obtaining a data portion of the current installation package." Claims 10 and 18 recite similar limitations.

Petitioner argues that "[t]he specification of the '520 patent does not expressly define the term 'remove'" and that the term "removing" "should be construed according to [its] plain and ordinary meaning, with the understanding that 'removing' requires some affirmative action beyond merely ignoring the customized information portion during upgrading or for comparison purposes." Pet. 33–34 (citing Ex. 1003 ¶ 19). In its application of the prior art to the claims, Petitioner argues that removing information encompasses "identif[ying], sav[ing], and transferr[ing]" the information. Pet. 39 (citing Ex. 1003 ¶ 36).

Patent Owner argues that

> the terms "removing / remove / being removed" would be understood by a [person of ordinary skill in the art] to mean that the customized information portion in question is taken from the

> installation package so that it is no longer present in the installation package and is set aside for later use.

PO Resp. 15 (citing Ex. 2019 ¶¶ 51, 53; Ex. 1001, 5:24–26, Figs. 1, 6).

In the Decision on Institution, we addressed these proposed constructions and made a preliminary determination that "'removing' information, as recited in the claims, encompasses 'identif[ying], sav[ing], and transferr[ing]' the information, as proposed by Petitioner, and 'set[ting] aside for later use' the information, as proposed by Patent Owner." Dec. on Inst. 9. We disagreed, however, with Patent Owner's position that "the recited 'removing' requires that the 'customized information portion' be 'no longer present in the installation package.'" Dec. on Inst. 8; *see also id.* at 6–9 (claim construction analysis for the term "removing").

For the reasons that follow, based on the full trial record, we determine, consistent with our Decision on Institution, that removing the customized information portion does not require that the customized information portion be "no longer present in the installation package." Nevertheless, in our patentability analysis below, we find that the asserted prior art teaches removing a customized information portion under Patent Owner's proposed interpretation as well.

We begin our claim interpretation analysis with the language of the claims. As noted above, claim 1 recites "removing a customized information portion from the current installation package and obtaining a data portion of the current installation package." Later, claim 1 recites "obtaining the new installation package by adding the customized information portion to the data portion of the new installation package." Thus, in the context of the claimed method, the "customized information

portion" is removed so that it can be added later to the new data portion to obtain the new installation package.

The '520 patent specification uses the term "removing" in the same sense as the claims, namely removing customized information to obtain a data portion and then adding the customized information to a newly generated data portion. Figure 1 of the '520 patent is reproduced below.

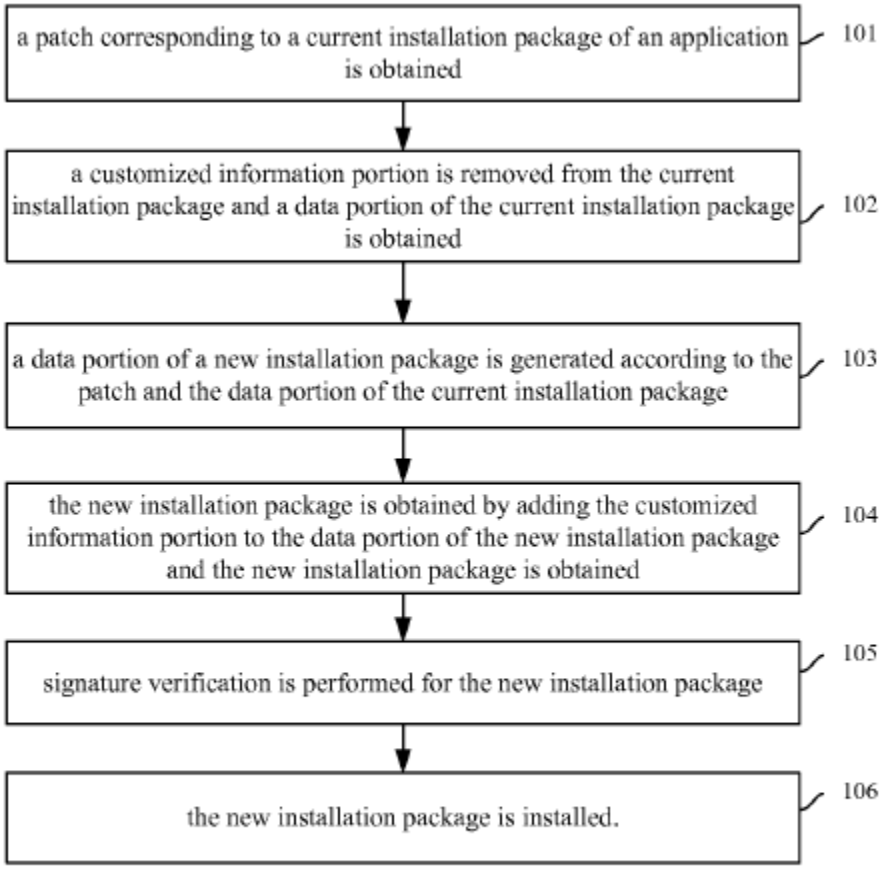


Fig. 1

Figure 1 of the '520 patent is a flowchart of a method of upgrading an application. Ex. 1001, 3:31–33. Referring to Figure 1, the '520 patent states that "[i]n block 102, a customized information portion is removed from the current installation package and a data portion of the current installation

package is obtained." Ex. 1001, 4:7–9. The '520 patent further states the following:

> In block 104, the new installation package is obtained by adding the customized information portion to the data portion of the new installation package and the new installation package is obtained.
>
> In this block, the customized information portion removed in block 102 is added to the data portion of the new installation package.

Ex. 1001, 5:20–26. Thus, it is the removed customized information portion that is used again in the claimed upgrading procedure.

Based on the claim language and the specification, we agree with Patent Owner that "removing a customized information portion from the current installation package," as recited in claim 1, encompasses "set[ting] aside for later use" that customized information portion. *See* PO Resp. 15. Claim 1 recites "obtaining the new installation package by adding the customized information portion to the data portion of the new installation package," and the "customized information portion" is what was "remov[ed] . . . from the current installation package." The passage from the specification quoted above makes clear that the previously removed "customized information portion" is added to the newly generated data portion. Ex. 1001, 5:20–26. Thus, the specification of the '520 patent explains that the removal is to set aside the customized information portion for later use in the upgrading process, but it does not define "removal" as resulting in a change to the "current installation package."

Patent Owner argues that the prosecution history supports its proposed interpretation. PO Resp. 17–18 (citing Ex. 1002, 192–96, 221); *see Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1299 (Fed. Cir. 2015)

("The PTO should also consult the patent's prosecution history in proceedings in which the patent has been brought back to the agency for a second review."). Patent Owner argues the following:

> During prosecution of the '520 patent, the applicant distinguished the claimed invention from the cited art by explaining that in the art cited by the examiner the signature was not "explicitly removed," and "[o]n the contrary . . . the customized information portion is removed from the current installation package."

PO Resp. 17–18 (quoting Ex. 1002, 192–93). The relevant portion of the prosecution history discussing the IP.com prior art reference is as follows:

> In IP.com, each file in the software product has a business signature that is sensitive to all the content of the file except certain content that is "unneeded" for comparison purposes (see P2, first paragraph, lines 3-4). In IP.com, the business signature *is not explicitly removed* from the corresponding file. On the contrary, as recited in claim 1, the customized information portion is removed from the current installation package.

Ex. 1002, 192–193 (Feb. 17, 2015 Response to Office Action) (emphasis added).

We find that the cited portion of the prosecution history does not support Patent Owner's position for two reasons. First, during prosecution, the applicant did not define the term "removing"; rather, the applicant simply noted that certain information has not been "explicitly removed." Thus, the applicant's arguments do not shed light on what it actually means to be "removing" specified information. Second, as quoted above, the applicant argued that, in the IP.com reference, "the business signature is not explicitly removed from the corresponding file." Ex. 1002, 192. It is not entirely clear how this was responsive to the Examiner's rejection. In

particular, the Examiner mapped the "unneeded" content of IP.com to the "customized information portion," as set forth in the following passage:

> P2: "The invention includes a new packager program that generates a business signature for each file. The business signature is a cryptographic checksum (which is currently based on md5 but could be differently based) sensitive to all the content of the file *[data portion]* except certain content that is "unneeded" for comparison purposes *[customized information portion]*. The mere action of recompilation will not change the business signature. Currently only the timestamp is considered unneeded content, but in the future other content may be isolated and designated as unneeded."

Ex. 1002, 164–165 (Nov. 26, 2014 Non-Final Action). According to the rejection, the Examiner mapped "certain content that is 'unneeded' for comparison purposes," such as the timestamp, to the claimed "customized information portion," and the Examiner mapped the rest of the "content of the file" to the data portion. Ex. 1002, 164–165. According to the quoted portion of the rejection, the business signature is a cryptographic checksum that is based on all content except the "unneeded" content (the "customized information portion"). Thus, whether the business signature was "explicitly removed" does not address the issue of whether the "certain content that is 'unneeded' for comparison purposes" (the "customized information portion") was removed. Thus, we do not find the prosecution history particularly insightful as to the meaning of "removing."

Having considered the intrinsic record, we now turn to the extrinsic evidence. Patent Owner relies upon a dictionary and a thesaurus to argue that the ordinary meaning of "remove" is to "get rid of, eliminate," and "delete," among other synonyms. PO Resp. 16 (citing Ex. 2013; Ex. 2014; Ex. 2019 ¶ 53). Patent Owner further analogizes the "removing" recited in

the claims to a "cut and paste" operation, in which text "is identified, saved (to a clipboard), and transferred to a new destination (upon paste)" and "necessarily removed from its former location, i.e., is no longer present in the position from which it was cut." PO Resp. 20. Patent Owner contrasts this with a copy and paste operation and argues that "the claims of the '520 patent would not specify to 'remove' a customized information portion if it only meant 'copy' and retain the customized information portion in its unaltered state." PO Resp. 20.

We find that the extrinsic evidence, as a whole and in context, does not support construing "removing" as requiring the deletion of the material that is removed. For example, Patent Owner cites a dictionary definition of "remove" as "to convey from one place to another." PO Resp. 16 (quoting Ex. 2014[7]). This is consistent with the notion that removed data are set aside for later use. It does not necessarily follow that data that are conveyed from one place to another are then separately deleted from their original location. Patent Owner also agrees with Petitioner's declarant's testimony that removing includes "extracting." PO Resp. 17 (citing Ex. 1003 ¶ 19). Extracting data from a location, however, does not necessarily require deletion of the data from that location. For example, a page may be extracted from a document but not deleted from that document if a user wants to isolate a particular page but not alter the underlying document. In this sense, the '520 patent is directed to upgrading an application, and the challenged claims do this by performing certain operations on or with parts of a "current installation package" to arrive at a "new installation package."

[7] Patent Owner cites Exhibit 2013, but the quoted material appears in Exhibit 2014.

In particular, a "patch" is applied to the "data portion of the current installation package" to "generat[e] a data portion of a new installation package," and the "new installation package" is obtained "by adding the customized information portion to the data portion of the new installation package." After the upgrade process, the "current installation package" is simply an old version of software whose contents are irrelevant. The '520 patent is concerned with installing the updated installation package. It discloses nothing about what happens with the older installation package or what the contents of the older installation package are.

In the Decision on Institution, we stated the following:

> For purposes of claim 1, the "customized information portion" and the "data portion" are the two components of the "current installation package" that are required to practice the remainder of the claim. Whether or not the "customized information portion" is actually deleted from the "current installation package" appears to be of no significance for the performance of claim 1. Indeed, in the context of computer technology, once a subset of data is removed by setting it aside from a larger set of data, it may involve little more than a labeling exercise to deem the set-aside data no longer present in the original larger set of data. The non-set-aside data can simply be considered to be another data set that does not have the set-aside subset of data.

Dec. on Inst. 8–9.

With reference to our Decision on Institution, Patent Owner argues the following:

> [T]he removal of a customized information portion requires that it no longer be a part of the data set to which it once belonged, as the Board acknowledged in its institution decision. Institution Decision, Paper 9 at 8 ("once a subset of data is removed by setting it aside from a larger set of data, it may involve little more than a labeling exercise to deem the set-aside data *no longer present in the original larger set of data*") (emphasis added).

> Whether this non-association is accomplished by relabeling pointers to data or by an operation similar to a "cut and paste" is not detailed in the '520 patent. The '520 patent does, however, require that the *removed* customized information portion *no longer be present in the original larger set of data* that is the installation package.

PO Sur-reply 11–12. Patent Owner's acknowledgment that the '520 patent does not detail how removal affects the current installation package indicates that an effect on the current installation package is not a concern of the '520 patent, as explained above. Furthermore, even if we accepted Patent Owner's proposed construction, Patent Owner's argument here makes clear that having data be "no longer present in the installation package" may take the form of a "non-association" of the data from a set of data, which may be "accomplished by relabeling pointers to data," rather than deletion of data. PO Sur-reply 11–12.

Based on the trial record, we do not consider Patent Owner's proposed construction to be the broadest reasonable interpretation. Rather, we maintain our preliminary determination that the broadest reasonable interpretation of "removing" in light of the specification of the '520 patent encompasses identifying, saving, and transferring[8] the information and setting aside the information for later use. Dec. on Inst. 9.

We nonetheless address obviousness under Patent Owner's proposed construction in our analysis below because it is similar to subject matter proposed in Patent Owner's Contingent Motion to Amend, and we determine

[8] We use the conjunction "and" because we deem all three to be required. We do not deem merely identifying information, for example, to meet the "removing" limitation.

that, even accepting Patent Owner's proposed construction, the challenged claims are not patentable over the prior art of record.

3. Obtaining

Each of the challenged independent claims and each of the proposed substitute independent claims recites "obtaining" or "obtain." Patent Owner argues that to "obtain" means "to get, or acquire, or secure (something) through an effort or by request." PO Resp. 13 (citing Ex. 1001, 4:7–9, Figs. 1, 6; Ex. 2019 ¶ 54). Patent Owner argues that this construction is necessary because our interpretation of "removing" in the Decision on Institution "is not meaningfully distinguishable from 'obtaining.'" PO Resp. 14. Petitioner disputes this proposed construction and argues that no construction is necessary. Pet. Reply 4–6. For the "obtaining" limitations—"obtaining a patch package," "obtaining a data portion," and "obtaining the new installation package"—Patent Owner makes no distinction over the art based on its proposed construction for "obtaining." We, therefore, agree with Petitioner that no explicit construction is necessary for the term "obtain."

4. Comment Field of the ZIP File / Apk File

Patent Owner argues that "[t]he 'comment field of the zip file' / 'comment field of the apk file,'" as recited in claims 6, 14, 19, and 20, "would be understood by a [person of ordinary skill in the art] to mean 'a field at the end of a zip/apk file used by developers to store information describing the zip/apk file.'" PO Resp. 21–22 (citing Ex. 2019 ¶ 57); *see* Ex. 1001, claims 6, 14, 19, 20. Petitioner disagrees, arguing this proposed construction is too narrow. Pet. Reply 10. Neither party cites any intrinsic evidence that would define the involved phrases. PO Resp. 21–22; Pet.

Reply 10. The only non-testimonial extrinsic evidence that either party cites for construing the involved phrases is the definition for the comment field in the ZIP File Format Specification. PO Resp. 21–22; Pet. Reply 10. As Patent Owner explains, "The comment field of a zip file is defined in the ZIP File Format Specification as residing in the 'end of central directory record' and comprising '[t]he comment for this .ZIP file.'" PO Resp. 22 (alteration in original) (quoting Ex. 1006, 2, 5, 17; Ex. 2019 ¶ 57).

We do not adopt Patent Owner's proposed construction, which defines the recited comment fields, not merely based on what they are, but also on how they are used (*i.e.*, "used by developers to store information describing the zip/apk file"). Patent Owner provides no credible support for including such a use requirement into the construction of the recited comment fields. As discussed above, the only cited non-testimonial evidence is the definition from the ZIP File Format Specification, which, as shown above, does not include such a use requirement. Other than specifying that we are not adopting this proposed use requirement, we do not need to further construe the recited comment fields because the cited prior art indisputably discloses ZIP files and comment fields within them, thereby satisfying both Patent Owner's proposed construction (minus the use requirement) and the ZIP File Format Specification's definition. *See* PO Sur-reply 22 ("The existence of ZIP files and comments fields within them is not in dispute."). Thus, further construction of these terms is not necessary to resolve any dispute in this case.

C. Principles of Law

A patent claim is unpatentable under 35 U.S.C. § 103 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) any secondary considerations, if in evidence.[9] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

D. Obviousness over the Combination of Waldmann, Schuelein, and AAPA (Claims 1, 7, 8, 10, 15, 16, 18)

Petitioner asserts claims 1, 7, 8, 10, 15, 16, and 18 of the '520 patent are unpatentable under 35 U.S.C. § 103 as obvious over the combined teachings of Waldmann, Schuelein, and AAPA. Pet. 22–29, 36–61.

1. Waldmann

Waldmann describes a method for installing a new version of software on a computer by using a delta-update package to create an updated software installation package from an old installation software package. Ex. 1004, code (57). As part of the updating process, Waldmann discloses ways "to preserve data and preferences input by [a] hearing device professional." Ex. 1004, 21:3–10.

[9] Patent Owner does not present any objective evidence of nonobviousness (i.e., secondary considerations) as to any of the challenged claims.

2. Schuelein

Schuelein relates to updating software and discloses identifying "customer specific data and/or customer protocols" of a previous version of the software and "integrat[ing] the customer specific data with the revised version of the software application." Ex. 1005, code (57), ¶¶ 36, 52.

3. AAPA

Petitioner identifies as "Applicant Admitted Prior Art ('APA' [or ('AAPA')]" various disclosures in the "Background of the Invention" section of the '520 patent relating to the use of a patch package to update software. *See, e.g.*, Pet. 16–17, 36–37, 45, 63 (citing Ex. 1001, 1:23–28, 1:30–38, 1:42–47, 1:51–52, 1:57–58).

As acknowledged in AAPA, "increment upgrade solutions are widely used currently." Ex. 1001, 1:26–29. According to AAPA, "[i]n the increment upgrade solution, an old installation package and a new installation package are both binary file, differences between the old installation package and the new installation package are found out by using a bsdiff tool, and a patch package is obtained." Ex. 1001, 1:30–34. AAPA also discloses that "the installation package of the application includes a data portion and a customized information portion" and that "[t]he bsdiff algorithm is performed only for the data portion." Ex. 1001, 1:42–47.

4. Independent Claim 1

a) Overview of Petitioner's Contentions and Our Findings as to Undisputed Limitations

Petitioner argues that each of Waldmann, Schuelein, and AAPA teaches "[a] method for upgrading an application," as recited in the preamble of claim 1. Pet. 36–37 (citing Ex. 1004, 15:2–4, 21:11–13; Ex. 1005, code (57); Ex. 1001, 1:26–28). We agree that each of Waldmann, Schuelein, and

AAPA teaches upgrading an application, as discussed above in our overview of the prior art.[10] *See* above §§ II.D.1–3.

For the limitation reciting "obtaining a patch package corresponding to a current installation package of an application," Petitioner relies on Waldmann's disclosure of receiving a delta-update package and AAPA's disclosure of obtaining a patch package. Pet. 37–38 (citing Ex. 1004, 15:1–2, 17:1–4; Ex. 1001, 1:30–38; Ex. 1003 ¶ 35). We are persuaded, and we find, that Waldmann and AAPA teach this subject matter. For example, Waldmann discloses receiving a "delta-update package," which "comprises an executable file 3250, which is an installation script suitable for managing the described updating of said old installation-software package." Ex. 1004, 17:1–5. AAPA discloses that "differences between the old installation package and the new installation package are found out by using a bsdiff tool, and a patch package is obtained." Ex. 1001, 1:30–34.

Petitioner contends that "removing a customized information portion from the current installation package and obtaining a data portion of the current installation package," as recited in claim 1, would have been obvious based on the combined teachings of Waldmann, Schuelein, and AAPA. Pet. 38–41 (citing Ex. 1001, 1:42–47; Ex. 1005 ¶¶ 32–33, 41–42, Figs. 3, 4; Ex. 1003 ¶ 36). Petitioner argues that both Schuelein and Waldmann disclose preserving customized information during a software upgrade process. Pet. 22–23 (citing Ex. 1004, 20:26–21:10; Ex. 1005 ¶¶ 32, 33, 52; Ex. 1003 ¶¶ 23–25). In particular, Petitioner relies on Schuelein's disclosure of

[10] We need not decide whether the preambles of the challenged claims are limiting because we find that Petitioner has shown that these preamble recitations are taught by the cited art.

identifying and saving certain customer-specific data for use later in the updating process. Pet. 39–41 (citing Ex. 1005 ¶¶ 32–33, 41–42, Figs. 3, 4); *see also* Pet. 23 (discussing Schuelein's disclosure in explaining a reason to combine). Petitioner also relies on Waldmann's disclosure of ways "to preserve data and preferences input by the hearing device professional." Ex. 1004, 21:8–10, *quoted in* Pet. 22–23. More particularly, Waldmann discloses the following:

> In optional step S13, any old versions of the hearing-device fitting-software package are deleted from the storage medium of the computer system on which the new version of the hearing-device fitting-software package shall be installed. This shall avoid problems during the installation depicted in step S15. Alternatively, paths and directories belonging to the old version of the hearing-device fitting-software package can be renamed. A further alternative is to overwrite the old version of the hearing-device fitting-software package by the new version of the hearing-device fitting-software package. This can allow to preserve data and preferences input by the hearing device professional.

Ex. 1004, 20:27–21:10.

Petitioner notes that Waldmann's procedures for preserving data and preferences are alternatives to deleting the old software, which avoids installation problems. Pet. 22–23. Petitioner argues the following:

> A person of ordinary skill in the art would have also understood that the technique for preserving customized information as disclosed by Schuelein would have accomplished both of the goals contemplated by Waldmann—removing the customized information "shall avoid problems during the installation" in the same manner as deleting the old installation (which included the customized information), but later integrating the customized information back into the installation "can allow to preserve data and preferences input" prior to the upgrade.

Pet. 23 (citing Ex. 1004, 21:8–10; Ex. 1003 ¶¶ 24–25). According to Petitioner, the combination of Waldmann and Schuelein

> would have resulted in a system for upgrading software application installation packages through the use of patches as disclosed by Waldmann where customized information would have been removed and preserved throughout the upgrade process by identifying, saving, and transferring the customized information prior to upgrade and integrating the information into the new installation package as taught by Schuelein.

Pet. 24 (citing Ex. 1003 ¶ 25).

As noted by Petitioner (Pet. 27), AAPA discloses that "the installation package of the application includes a data portion and a customized information portion" and that "[t]he bsdiff algorithm is performed only for the data portion." Ex. 1001, 1:42–47. Petitioner argues

> [a] person of ordinary skill in the art would . . . have been motivated to combine APA with the disclosure of Waldmann and Schuelein because the known separation of installation packages into a data portion and a customized information portion would have permitted the preservation of customized information as taught by both Waldmann and Schuelein.

Pet. 27 (citing Ex. 1003 ¶ 24).

Citing AAPA's disclosure that "the installation package of the application includes a data portion and a customized information portion" (Ex. 1001, 1:42–43, *quoted in* Pet. 38), Petitioner argues that "[w]hen the customized information portion is removed as taught by Schuelein, then it would be obvious in view of APA that the data portion of the installation package remains." Pet. 41 (citing Ex. 1003 ¶ 36).

We discuss Patent Owner's arguments as to the "removing" limitation below.

Petitioner argues Waldmann and AAPA teach "generating a data portion of a new installation package according to the patch package and the data portion of the current installation package." Pet. 41–43 (citing Ex. 1004, code (57), 10:27–29, 21:5–10; Ex. 1001, 1:30–38, 1:44; Ex. 1003 ¶ 37). We are persuaded, and we find, that Waldmann and AAPA teach this subject matter. As noted by Petitioner (Pet. 41), Waldmann discloses "using said delta-update package (3200) for creating said updated installation-software package (300) out of said old installation-software package (200)." Ex. 1004, code (57). Waldmann also discloses ways to "preserve data and preferences input by the hearing device professional." Ex. 1004, 21:3–10. Petitioner argues that

> [a] person of ordinary skill in the art would understand that, to preserve data and preferences, the delta-update package would only be applied to the data portion—i.e. the portion of the old installation package that needs to be upgraded—so that the data and preferences to be preserved do not get changed or deleted.

Pet. 42 (citing Ex. 1003 ¶ 37). As also noted by Petitioner (Pet. 42), AAPA discloses that "differences between the old installation package and the new installation package are found out by using a bsdiff tool, and a patch package is obtained" and that "[t]he bsdiff algorithm is performed only for the data portion." Ex. 1001, 1:30–34, 1:44.

Petitioner relies on Schuelein and Waldmann to teach "obtaining the new installation package by adding the customized information portion to the data portion of the new installation package," as recited in claim 1. Pet. 43–44 (citing Ex. 1005 ¶¶ 34, 52; Ex. 1004, 21:3–10; Ex. 1003 ¶ 38). In particular, Petitioner relies on Schuelein's disclosure of "automatically integrat[ing] the customer specific data with the revised version of the software application." Ex. 1005 ¶ 52, *quoted in* Pet. 43. Furthermore,

Petitioner relies on Waldmann's disclosure of "preserv[ing] data and preferences input by the hearing device professional." Ex. 1004, 21:3–10, *quoted in* Pet. 44. Petitioner argues

> [a] person of ordinary skill in the art at the time of the alleged invention would have understood that another way to preserve data and preferences as described by Waldmann would be to re-input those customized data and protocols—i.e. to add them to the new version of the software package—as taught by Schuelein.

Pet. 44 (citing Ex. 1003 ¶ 38).

We discuss Patent Owner's arguments as to the "obtaining the new installation package" limitation below.

Petitioner contends Waldmann and AAPA teach "installing the new installation package," as recited in claim 1. Pet. 44–45 (citing Ex. 1004, 21:11–14; Ex. 1001, 1:34–38, 1:57–58). We are persuaded, and we find, that Waldmann and AAPA teach this subject matter. For example, Waldmann discloses that "[i]n step S15, the updated installation-software package created in step S5 is used for installing the desired new version of the hearing-device fitting-software package in the computer system." Ex. 1004, 21:11–14, *quoted in* Pet. 44–45.

b) Patent Owner's Arguments and Our Analysis

Patent Owner's arguments for this ground focus on the limitations of claim 1 reciting "removing a customized information portion from the current installation package and obtaining a data portion of the current installation package" and "obtaining the new installation package by adding the customized information portion to the data portion of the new installation package" and also focus on Petitioner's reasoning to combine the references. PO Resp. 25–44.

i. Removing a customized information portion

Patent Owner argues that Schuelein does not teach "removing a customized information portion from the current installation package and obtaining a data portion of the current installation package" for two reasons. PO Resp. 28–34. First, Patent Owner argues that Schuelein does not teach "a customized information portion." PO Resp. 29–31. Patent Owner acknowledges that Schuelein discloses customer specific data and protocols, but Patent Owner disputes Petitioner's argument that Schuelein's "network information" teaches "a network traffic tip," which is one example of customized information according to the '520 patent. PO Resp. 29–31 (citing Ex. 1005 ¶¶ 5, 19–21, 32; Ex. 2019 ¶ 81; Ex. 1003 ¶ 36; Ex. 2015, 64:2–65:1); *see* Pet. 41 ("Schuelein further teaches that customized information may include network information, for example, which corresponds to an example of customized information provided by the '520 patent: a network traffic tip.").

As an initial matter, we do not find the parties' arguments regarding whether Schuelein's network information would be termed a "network traffic tip" particularly helpful given Patent Owner's acknowledgement that "[t]he term 'network traffic tip' is not a term of art and would not generally be known by a [person of ordinary skill in the art]." PO Resp. 22–23 (citing Ex. 2019 ¶ 58). Other than mentioning "network traffic tip" three times as an example of customized information, the '520 patent contains no disclosure of what a "network traffic tip" is. Ex. 1001, 4:10–12, 8:37–39, 9:10–13. Therefore, because the term "network traffic tip" is not recited in any claim, because the '520 patent does not describe what the term "network traffic tip" means, and because Patent Owner states that it "is not a term of

art and would not generally be known by a [person of ordinary skill in the art]" (PO Resp. 22–23), we need not and we do not address whether Schuelein's network information would be termed a "network traffic tip."

As Petitioner correctly asserts, AAPA discloses an installation package having a "customized information portion." Pet. 38–39 (citing Ex. 1001, 1:42–47). In particular, AAPA discloses that "[c]urrently, the installation package of the application includes a data portion and a customized information portion," and AAPA further discloses "a release channel of the installation package" as an example of "customized information." Ex. 1001, 1:42–47. Thus, AAPA discloses "a customized information portion" under Patent Owner's proposed construction of the term as "comprising 'at least one of a release channel of the application, a network traffic tip, an update mode or a link to the release channel,'" which we have not adopted. PO Resp. 13; *see* above § II.B.1. In addition, Patent Owner acknowledges that Petitioner "relied on APA for the existence of a customized information portion." PO Sur-reply 16 (citing Pet. 38–41).

Furthermore, as Patent Owner acknowledges (PO Resp. 29), Schuelein discloses customer-specific data and protocols. Ex. 1005 ¶ 32, *cited in* Pet. 39. Schuelein discloses the following: "The customer specific data and/or customer protocol data identified and saved may include the type of information detailed previously. For instance, the data identified and saved may relate to the type of hardware, the hardware configuration, the software configuration, measurement protocols generated by the customer, and network information." Ex. 1005 ¶ 32. As Petitioner points out, the '520 patent identifies "device type" as an example of "customized information." *See* Pet. Reply 16 (citing Ex. 1001, 6:20–25). We are persuaded by

Petitioner's argument that Schuelein's disclosure of the type of hardware and the hardware configuration discloses "device type," thereby teaching "customized information" consistent with the '520 patent. *See* Pet. Reply 16–17 (citing Ex. 1001, 6:20–25; Ex. 1005 ¶ 32; Ex. 1014, 78:4–9).

Second, Patent Owner argues that Schuelein's disclosure of identifying, saving, and transferring customer specific information does not teach "removing." PO Resp. 31–34; PO Sur-reply 15–18. Patent Owner's arguments rely on its proposed interpretation of "removing" to mean that the removed data "is no longer present in the installation package." PO Resp. 15, 31–34. For the reasons discussed above in § II.B.2, we do not agree that Patent Owner's proposed construction is the broadest reasonable interpretation. Patent Owner argues that Schuelein's "identification and saving/transferring of customer specific data is akin to a 'copy' operation in which the desired data exists both in its original location and in the newly desired location." PO Resp. 31–32 (citing Ex. 2019 ¶ 82). Thus, Patent Owner acknowledges that Schuelein teaches identifying, saving, and transferring the information and setting aside the information for later use, which is encompassed by the broadest reasonable interpretation of the term "removing," as discussed above. We agree, and we find Schuelein teaches "removing" by disclosing that "customer specific data and/or customer protocol data for a software application may be identified and saved 206" and "may be transferred to the central location 208," where this data may be integrated into a revised version of the software. Ex. 1005 ¶¶ 32–33, 35–36. Thus, the data are identified, saved, and transferred and set aside for later use.

We also are persuaded that "removing a customized information portion from the current installation package and obtaining a data portion of the current installation package," as recited in claim 1, would have been obvious based on the asserted prior art even under Patent Owner's proposed construction. As Petitioner correctly points out (Pet. 38–39), AAPA discloses that "[c]urrently, the installation package of the application includes a data portion and a customized information portion." Ex. 1001, 1:42–43. Thus, it was known in the prior art to have an installation package with two parts: a data portion and a customized information portion. Under Patent Owner's proposed construction, removing the customized information portion would require taking it "from the installation package so that it is no longer present in the installation package." PO Resp. 15. Thus, after removal, the installation package would simply be the data portion. Stated differently, the data portion is by definition the installation package less the customized information portion.

Under Patent Owner's proposed construction, neither the customized information portion nor the data portion is changed as a result of the removing step. Rather, after the removing step, according to Patent Owner, the current installation package and the data portion are identical except for the label applied. As we stated in the Decision on Institution, "in the context of computer technology, once a subset of data is removed by setting it aside from a larger set of data, it may involve little more than a labeling exercise to deem the set-aside data no longer present in the original larger set of data." Dec. on Inst. 9. Referring to this statement from the Decision on Institution, Patent Owner notes that "[w]hether this non-association is accomplished by relabeling pointers to data or by an operation similar to a

'cut and paste' is not detailed in the '520 patent." PO Sur-reply 12. That the '520 patent does not detail how this is accomplished is not surprising. As noted above in our claim construction discussion, the '520 patent is not concerned with what happens to the "current installation package" after updating. Rather, the constituent parts of the current installation package—the customized information portion and the data portion—are used to create a new installation package, and, therefore, both of these portions continue to exist after the removal step. Indeed, they must exist to complete the claimed upgrading process. Patent Owner's argument about "relabeling pointers to data" (PO Sur-reply 12) highlights the fact that Patent Owner's proposed construction does not require any change to the data but, rather, is simply a matter of labeling data. Patent Owner's argument over the prior art, therefore, rests entirely on an alleged distinction between AAPA's disclosure of a "data portion" having particular data and a differently labeled data package ("current installation package" less "customized information portion") having the same data. We are persuaded that taking the customized information portion from the installation package so that it is no longer present in the installation package would have been obvious to a person of ordinary skill in the art because it would have simply involved considering the data portion to be the installation package without the customized information portion.

Furthermore, AAPA establishes that the data portion is a separate entity that is obtained so that operations can be performed on it independent of the customized information portion. In particular, AAPA states the following: "In the increment upgrade solution, an old installation package and a new installation package are both binary file, differences between the

old installation package and the new installation package are found out by using a bsdiff tool, and a patch package is obtained." Ex. 1001, 1:30–34. AAPA further states that "[t]he bsdiff algorithm is performed only for the data portion." Ex. 1001, 1:44–47, *cited in* Pet. 38–39. Thus, AAPA establishes that "obtaining a data portion of the current installation package" was known in the prior art so that the bsdiff algorithm could be performed on the data portion.

In addition, Patent Owner acknowledges that "Waldmann actually teaches that 'any old versions of the hearing-device fitting-software are deleted.'" PO Resp. 41 (citing Ex. 1004, 20:27–21:3; Ex. 2015, 77:3–8). In particular, Waldmann discloses the following: "In optional step S13, any old versions of the hearing-device fitting-software package are deleted from the storage medium of the computer system on which the new version of the hearing-device fitting-software package shall be installed." Ex. 1004, 20:27–21:2. Patent Owner, however, argues that deleting the whole installation package does not teach removing a portion of that package. PO Resp. 41. We disagree because deleting an entire file deletes all portions of that file, and, according to Patent Owner, deletion is synonymous with removal. *See* PO Resp. 16 (citing Ex. 2014) ("While the term 'remove' is not defined in the Microsoft Computer Dictionary, its synonym is 'delete.'").

We further note that the AAPA contradicts Patent Owner's assertion that

> [t]he need for the invention [of the '520 patent] arose because then-available incremental upgrade technologies only operated on entire installation files—the bsdiff tool was used to take an old installation package and a new installation package as inputs and produce a patch package based on the binary level difference between the two files.

PO Resp. 3. As noted above, AAPA states that "[t]he bsdiff algorithm is performed only for the data portion." Ex. 1001, 1:44–47. Thus, it was already known in the prior art, as evidenced by AAPA, that a bsdiff algorithm is performed only for the data portion and not the entire installation package to obtain a patch package for the installation package.

Based on the foregoing, we are persuaded by Petitioner's arguments and evidence, and we find that the combination of Waldmann, Schuelein, and AAPA teaches "removing a customized information portion from the current installation package and obtaining a data portion of the current installation package."

ii. Obtaining the new installation package by adding the customized information portion to the data portion

Patent Owner also contends Schuelein does not teach "obtaining the new installation package by adding the customized information portion to the data portion of the new installation package." Patent Owner argues that Schuelein's customer specific data

> are not in the category of data included in a customized information portion of an installation package which, as explained by the claims of the '520 patent "comprises at least one of a release channel of the application, a network traffic tip, an update mode or a link to the release channel."

PO Resp. 35 (citing Ex. 1001, 4:10–12; Ex. 2019 ¶ 83). For the reasons explained above in § II.B.1, we do not agree with Patent Owner that the claimed "customized information portion" is limited to the four categories of information identified by Patent Owner, and, for the reasons explained above in § II.D.4.b.i, we are persuaded that both AAPA and Schuelein teach the claimed "customized information portion."

Patent Owner also argues that in Schuelein, "the customer specific data and customer protocols of Schuelein are added to an installation package *on a remote site*." PO Resp. 35. The challenged claims, however, do not specify a location at which the customized information portion must be added to the data portion. By contrast, independent claim 9, which is not challenged, recites "a client terminal . . . obtains the new installation package by adding the customized information portion to the data portion of the new installation package." Schuelein discloses that "a data processing system located at the central location may automatically integrate the customer specific data with the revised version of the software application." Ex. 1005 ¶ 52, *quoted in* Pet. 43. Thus, we are persuaded Schuelein teaches adding the customized information portion to the data portion even though it teaches doing this at a central location, rather than at a client.

iii. Rationale to combine

Patent Owner also argues that a person of ordinary skill in the art would not have been motivated to combine Waldmann, Schuelein, and AAPA. PO Resp. 40–43. Patent Owner argues that "[b]y its nature, customer specific data, i.e., data specific to a customer," as disclosed in Schuelein, "would *not* be part of an installation patch meant to upgrade software on a multitude of users' computers." PO Resp. 40 (citing Ex. 2019 ¶¶ 69–70). The claims, however, do not require the "customized information portion" to "be part of an installation patch meant to upgrade software on a multitude of users' computers," as suggested by Patent Owner's argument. *See* PO Resp. 40. Rather, claim 1 recites "generating a data portion of a new installation package according to the patch package and the data portion of the current installation package" and then "obtaining

the new installation package by adding the customized information portion to the data portion of the new installation package." Thus, the "customized information portion" is not required to be part of the patch in claim 1 but, rather, is added to the new data portion, which is generated according to the patch. In the same way, Schuelein discloses "automatically integrat[ing] the customer specific data with the revised version of the software application." Ex. 1005 ¶ 52, *quoted in* Pet. 43.

Patent Owner also argues Petitioner mischaracterizes Waldmann because Waldmann actually teaches deleting old versions and a person of ordinary skill in the art "would have understood that deleting an old version of an installation package after installing a new installation package does not remove and preserve metadata while patching the data portion of an installation package, as is required by the claims of the ['520 patent." PO Resp. 41 (citing Ex. 2001 ¶ 72). We do not agree with Patent Owner that Petitioner mischaracterizes Waldmann. Waldmann discloses the following:

> In optional step S13, any old versions of the hearing-device fitting-software package are deleted from the storage medium of the computer system on which the new version of the hearing-device fitting-software package shall be installed. This shall avoid problems during the installation depicted in step S15. *Alternatively*, paths and directories belonging to the old version of the hearing-device fitting-software package can be renamed. A further alternative is to overwrite the old version of the hearing-device fitting-software package by the new version of the hearing-device fitting-software package. This can allow to preserve data and preferences input by the hearing device professional.

Ex. 1004, 20:27–21:10 (emphasis added). Thus, this passage of Waldmann teaches that deleting old versions "avoid[s] problems during the installation" of the updated software, and it also teaches that alternatives to deleting allow

the preservation of certain data. Petitioner argues that these two goals—avoiding problems during installation and preserving data—are achieved by alternative procedures in Waldmann but can both be achieved by applying Schuelein's teachings of identifying, saving, and transferring customized information for later reincorporation into the updated software. *See* Pet. 23 (citing Ex. 1003 ¶¶ 24–25).

Patent Owner also argues that "[g]enerating and applying the delta-update of Waldmann would create a unique patch for every different set of customer data that customized any new release of an installation package," which "would produce undesirable results" because there would be so many different patches. PO Resp. 42–43 (citing Ex. 2019 ¶ 74). Petitioner, however, argues that Waldmann's delta-update package teaches the claimed "patch package" and that "the delta-update package would only be applied to the data portion—i.e. the portion of the old installation package that needs to be upgraded." Pet. 37–38, 42. In combination with Waldmann, Petitioner relies on Schuelein's teaching of reincorporating customized information after the patch package (Waldmann's delta-update package) has been applied. Pet. 43–44. Thus, we do not agree with Patent Owner's argument that in Petitioner's proposed combination there is a "problem of an incalculable number of patches being required for the various possible combinations of customized information portions of installation packages with a common data portions of an installation package." PO Resp. 43.

Having considered the full record developed during trial, we are persuaded by Petitioner's reasoning to combine Waldmann, Schuelein, and AAPA. As discussed above, Waldmann discloses using a "delta-update package" to update an old software package. Ex. 1004, code (57), 17:1–5.

Waldmann also discloses ways "to preserve data and preferences input by the hearing device professional." Ex. 1004, 21:8–10. Similarly, Schuelein discloses identifying and saving certain customer-specific data and then "automatically integrat[ing] the customer specific data with the revised version of the software application." Ex. 1005 ¶¶ 32–33, 52. Thus, we agree with Petitioner that "both Waldmann and Schuelein disclose that it is desirable to preserve customized data during the upgrade process." Pet. 26–27 (citing Ex. 1003 ¶ 23). Furthermore, as discussed above, AAPA discloses that an "installation package of the application includes a data portion and a customized information portion" and that the bsdiff algorithm, which is used to obtain the patch package, "is performed only for the data portion." Ex. 1001, 1:30–34, 1:42–47. In light of these teachings of the prior art, Petitioner contends that a person of ordinary skill in the art would have been motivated to combine AAPA with Waldmann and Schuelein "because the known separation of installation packages into a data portion and a customized information portion would have permitted the preservation of customized information as taught by both Waldmann and Schuelein." Pet. 27 (citing Ex. 1003 ¶ 24). We agree because AAPA discloses what would have been known to a person of ordinary skill in the art at the relevant time, namely that to upgrade software a patch is applied to a data portion but not to the customized information portion. *See Koninklijke Philips N.V. v. Google LLC*, 948 F.3d 1330, 1337 (Fed. Cir. 2020) ("[T]he inquiry into whether any 'differences' between the invention and the prior art would have rendered the invention obvious to a skilled artisan necessarily depends on such artisan's knowledge."). Waldmann and Schuelein both disclose a desire to preserve customized information during upgrading, and Schuelein

discloses integrating the customized information into the updated software in a manner that furthers Waldmann's goals of avoiding problems during installation and preserving data. *See* Ex. 1004, 20:27–21:10; Ex. 1003 ¶¶ 24–25. Thus, we find a person of ordinary skill in the art would have been motivated to combine the teachings of Waldmann, Schuelein, and AAPA to upgrade a software application and preserve customized data at the same time.

c) Determination of unpatentability of claim 1

For the reasons discussed above, we determine that the combination of Waldmann, Schuelein, and AAPA teaches or renders obvious all of the limitations of claim 1 and that a person of ordinary skill in the art would have had reason to, and would have been motivated to, combine the teachings of these references in the manner asserted. Having considered the full record developed during trial, we are persuaded by Petitioner's contentions and evidence, and we determine that Petitioner has proven by a preponderance of the evidence that claim 1 of the '520 patent is unpatentable under 35 U.S.C. § 103 as obvious over the combined teachings of Waldmann, Schuelein, and AAPA.

5. Independent Claims 10 and 18

Independent claim 10 is directed to "[a] non-transitory computer readable medium storing instructions thereon for upgrading an application, the instructions when executed by a processor cause the processor to" perform operations that correspond to the steps recited in claim 1. Independent claim 18 is directed to "[a] storage apparatus for storing an installation package of an application, comprising: a processor for executing modules stored in a non-transitory computer readable storage medium"

where the modules are "a first storing module" and "a second storing module." Independent claim 18 recites operations similar to steps recited in claim 1.

Petitioner contends claim 10 would have been obvious over the combined teachings of Waldmann, Schuelein, and AAPA for the reasons discussed for claim 1. *See* Pet. 22–29, 36–45 (arguing claims 1 and 10 together). Petitioner separately addresses claim 18, but its contentions are similar to its contentions for claims 1 and 10 given the substantial similarity of the claimed subject matter. *See* Pet. 50–61.

Patent Owner does not raise additional arguments concerning these claims but, rather, argues that Petitioner's contentions fail for the reasons addressed above with respect to claim 1. *See generally* PO Resp. 25–44.

We have reviewed Petitioner's contentions for claims 10 and 18, and we are persuaded that Petitioner has shown that the combination of Waldmann, Schuelein, and AAPA teaches the additional subject matter recited in claims 10 and 18. *See* Pet. 22–29, 36–45, 50–61. For this reason as well as the reasons given above in our analysis of claim 1 in § II.D.4, we are persuaded by Petitioner's contentions and evidence, and we determine that Petitioner has proven by a preponderance of the evidence that claims 10 and 18 of the '520 patent are unpatentable under 35 U.S.C. § 103 as obvious over the combined teachings of Waldmann, Schuelein, and AAPA.

6. Dependent Claims 7, 8, 15, and 16

Dependent claim 7 recites the following:

> The method according to claim 1, wherein generating a data portion of a new installation package according to the patch package and the data portion of the current installation package comprises: reading all of the data portion of the current

> installation package into a memory, and reading all of the patch into the memory; generating the data portion of the new installation package in the memory.

Dependent claim 15 depends from claim 10 and recites similar subject matter.

In its analysis of claims 7 and 15, Petitioner cites Waldmann's disclosures of receiving a delta-update package and using it to update software and argues,

> Because Waldmann discloses that a patch package can be received in a single portion, stored in a storage medium, and the old installation package may be read *at least* in part, it would have been obvious to a person of ordinary skill to read all of the patch and all of the data portion of the old installation package disclosed by Waldmann into memory in a single operation because this would have been the most resource-efficient way to apply a patch received in a single portion.

Pet. 45–46 (citing Ex. 1004, 13:22–23, 19:12–15, 19:23–24, 19:28–20:1; Ex. 1003 ¶ 39). Petitioner also argues AAPA's disclosure of using a patch package to generate a new installation package teaches this subject matter. Pet. 46 (citing Ex. 1001, 1:34–38, 1:42–45).

Dependent claim 8 recites the following:

> The method according to claim 1, wherein generating a data portion of a new installation package according to the patch and the data portion of the current installation package comprises: reading a preset length of the data portion of the current installation package into a memory and reading a preset length of the patch into the memory, in each read operation; generating a part of the data portion of the new installation package according to data read in each read operation after the read operation is performed; performing the reading operation and generating operation repeatedly until all parts of the data portion of the new installation package is generated; obtaining

> the data portion of the new installation package by combining each part of the data portion of the new installation package.

Dependent claim 16 depends from claim 10 and recites similar subject matter.

For claims 8 and 16, Petitioner cites Waldmann's disclosure that "[t]he delta-update package can be received in one or several portions" (Ex. 1004, 19:12–13) and argues that "[i]f the delta-update package were received in several portions, it would have been an obvious design choice to a person of ordinary skill in the art to apply each portion of the update package individually to each corresponding part of the data portion of the current installation package." Pet. 48–49 (citing Ex. 1004, 19:12–13; Ex. 1003 ¶ 40); *see also* Pet. 49–50 (citing Ex. 1004, 16:13–16, Fig. 2; Ex. 1003 ¶ 41) (providing additional explanation as to obviousness of claimed subject matter).

Patent Owner does not separately address the additional limitations recited in claims 2–6. *See generally* PO Resp.

Having considered the full record developed during trial, we are persuaded by Petitioner's contentions and evidence, and we determine that Petitioner has proven by a preponderance of the evidence that claims 7, 8, 15, and 16 of the '520 patent are unpatentable under 35 U.S.C. § 103 as obvious over the combined teachings of Waldmann, Schuelein, and AAPA.

E. Obviousness over the Combination of Waldmann, Schuelein, AAPA, and ZIP Format (Claims 6, 14, 19, 20)

Petitioner asserts claims 6, 14, 19, and 20 of the '520 patent are unpatentable under 35 U.S.C. § 103 as obvious over the combined teachings of Waldmann, Schuelein, AAPA, and ZIP Format. Pet. 29–31, 61–63.

1. ZIP Format

ZIP Format is a "specification [that] is intended to define a cross-platform, interoperable file storage and transfer format." Ex. 1006, 1. ZIP Format explains that .ZIP files have several sections, including an "end of central directory record" section, which includes a ".ZIP file comment" of "variable size." Ex. 1006, 2, 5.

2. Claims 6, 14, 19, and 20

Claim 6 recites:

> The method according to claim 1, wherein when the current installation package is a zip file, the customized information is comprised in a comment field of the zip file; or when the current installation package is an apk file, the customized information is comprised in a comment field of the apk file.

Claim 14 depends from independent claim 10 and recites similar subject matter. Claim 19 depends from independent claim 18 and recites the "zip file" subject matter recited in claim 6, and claim 20 depends from claim 18 and recites the "apk file" subject matter recited in claim 6.

Petitioner argues that Waldmann teaches storing an installation package using compressed files and that a person of ordinary skill would have been motivated to use the ZIP Format because it "is a standard format for providing compressed files that may later be extracted." Pet. 29–30 (citing Ex. 1004, 15:24–27, 16:7–10; Ex. 1007, 1; Ex. 1003 ¶¶ 29–30). Waldmann discloses "extracting compressed files" to obtain certain data. Ex. 1004, 16:7–10. Petitioner further argues that "[i]t would have been obvious to a person of ordinary skill in the art to store customized information—indeed, any information at all—in the comment field of a .zip file since the sole function of the comment field is to store information." Pet. 62 (citing Ex. 1003 ¶ 43).

Patent Owner argues that, "[w]hile a [person of ordinary skill in the art] at the time of the invention of the claims of the '520 patent would have knowledge of the ZIP format, nothing in the ZIP format would suggest combination with Waldmann and Schuelein." PO Resp. 47 (citing Ex. 2019 ¶ 75). We disagree with Patent Owner's argument. Waldmann itself discloses "extracting compressed files" to obtain certain data. Ex. 1004, 16:7–10. The .zip file format disclosed in ZIP Format was used for data compression. *See* Ex. 1003 ¶ 29 ("A person of ordinary skill in the art would have been well aware of the .zip file structure and the ZIP Format specification because of the widespread use of that compression format in a large variety of software applications prior to April 2013."); Ex. 2019 ¶¶ 42, 75 ("ZIP files, invented in 1989, were designed for archiving data efficiently via lossless data compression."). Thus, we are persuaded by Petitioner's contention that using the teachings of ZIP Format in combination with Waldmann, Schuelein, and AAPA "would have simply constituted the use of the known .zip file format for the exact purpose described by Waldmann, and a person of ordinary skill in the art would have had a reasonable expectation of success in doing so." Pet. 30 (citing Ex. 1003 ¶ 30).

Patent Owner also disputes Petitioner's contention that it would have been obvious to store customized information in the comment field of a .zip file, arguing that Petitioner's contention is based on hindsight. PO Resp. 44–49. Patent Owner argues that

> [t]he mere *existence* of the zip comments field, a field at the end of a zip file used by developers to store information describing the zip file, does not make obvious to a [person of ordinary skill in the art] to use the field for the purpose of storing a

> customized information portion of an installation package as is required by the claims of the '520 patent.

PO Resp. 46. We disagree with Patent Owner. As the Supreme Court has stated, "The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR*, 550 U.S. at 416. As discussed above, Waldmann discloses the use of compressed files, and the ZIP Format provided a well-known structure for compressed files. Ex. 1004, 16:7–10; Ex. 1003 ¶ 29; Ex. 2019 ¶¶ 42, 75. We are persuaded by Petitioner's assertion that the purpose of the comment field is to store data. Pet. 62 (citing Ex. 1003 ¶ 43); *see* Ex. 1006, 17 ("The comment for this .ZIP file. ZIP file comment data is stored unsecured. No encryption or data authentication is applied to this area at this time. Confidential information should not be stored in this section."). Storing particular data—in this case, "customized information"—in the comment field of a .zip file simply uses a storage location for its predictable and known use of storing data. Thus, we are persuaded by Petitioner's contention that "[i]t would have been obvious to a person of ordinary skill in the art to store customized information—indeed, any information at all—in the comment field of a .zip file since the sole function of the comment field is to store information." *See* Pet. 62 (citing Ex. 1003 ¶ 43).

Moreover, if Patent Owner's proposed construction for "comment field of the zip file" were adopted, it would further support a conclusion of obviousness. In particular, as discussed above in § II.B.4, Patent Owner asserts that a person of ordinary skill in the art would have understood "comment field of the zip file" to mean "a field at the end of a zip[] file used by developers to store information describing the zip[] file." PO Resp. 21–22 (citing Ex. 2019 ¶ 57). If the comment field is where developers store

data and if customized information is stored therein, as recited in the claims, then it stands to reason that the customized information is developer data of the type required in Patent Owner's construction. Otherwise, Patent Owner's construction would exclude the subject matter recited in the claims. *See* PO Sur-reply 14 (citation omitted) ("Petitioner ignores the way that the comment field of the zip/apk file is used in the context of the '520 patent—where it is utilized to store a customized information portion of an installation package distributed *by developers* to be installed on end-user devices."). Furthermore, customized information was known in the prior art, as discussed above with respect to AAPA (Ex. 1001, 1:42–43), and, as acknowledged by Patent Owner, "[t]he existence of ZIP files and comments fields within them is not in dispute" (PO Sur-reply 22). Indeed, Patent Owner and its declarant, Mr. Jonathan Hochman, rely on the asserted prior art ZIP Format specification as support for Patent Owner's proposed construction. PO Resp. 22 (citing Ex. 1006, 2, 5, 17); Ex. 2019 ¶ 57 (citing Ex. 1006, 2, 5, 17). Thus, storing customized information in the zip comment field would have been using the comment field for its intended purpose, as recognized by a person of ordinary skill in the art, namely for "developers to store information describing the zip/apk file," such information including "customized information," as recited in claims 6, 14, 19, and 20. *See* PO Resp. 21–22.

For the foregoing reasons, we are persuaded by Petitioner's contentions with respect to the "zip file" limitations of claims 6, 14, and 19.

As to the "apk file" limitations of claims 6, 14, and 20, Petitioner argues that

> [a]n apk file is a type of archive file similar to the .zip format, and a person of ordinary skill in the art would see no functional difference between the two formats such that it would have been just as obvious to place customized information in an apk file comment field.

Pet. 63 (citing Ex. 1003 ¶ 43). Patent Owner does not separately dispute Petitioner's contentions as to the "apk limitations" of claims 6, 14, and 20. Petitioner's contentions for the "apk limitaitons" are supported by the evidence of record, including the testimony of Dr. Clark. *See* Ex. 1003 ¶ 43 ("Although an apk file is a different format than a zip file, based on my knowledge and experience in my opinion the two file formats are similar in that they both have comment fields that do not participate in signature verification. As such, in my opinion, a person of ordinary skill in the art would have found it just as obvious to utilize the comment field in an apk file for the same reasons described above with respect to a zip file.").

Having considered the full record developed during trial, we are persuaded by Petitioner's contentions and evidence, and we determine that Petitioner has proven by a preponderance of the evidence that claims 6, 14, 19, and 20 of the '520 patent are unpatentable under 35 U.S.C. § 103 as obvious over the combined teachings of Waldmann, Schuelein, AAPA, and ZIP Format.

F. Obviousness over the Combination of Waldmann, Schuelein, AAPA, and O'Neill (Claims 2–5, 11–13)

Petitioner asserts claims 2–5 and 11–13 of the '520 patent are unpatentable under 35 U.S.C. § 103 as obvious over the combined teachings of Waldmann, Schuelein, AAPA, and O'Neill. Pet. 31–32, 63–68.

1. O'Neill

O'Neill discloses a procedure for updating software in which a client device polls a server for a server manifest, which has information used to determine the latest version of software to be updated. Ex. 1009, 13:1–24, Fig. 2A. The client device uses the server manifest to determine if an update should be downloaded, and if so, the client device requests, receives, and installs the update. Ex. 1009, 13:25–60, Fig. 2A. O'Neill also discloses the use of an md5 algorithm for validation of an update package. Ex. 1009, 38:38–64.

2. Claims 2 and 11

Claim 2 recites:

> The method according to claim 1, wherein obtaining a patch package corresponding to an old installation package of an application comprises: sending a request to upgrade the application; receiving a upgrading file; the upgrading file indicating a relation between information of installation packages and information of patches corresponding to the installation packages; determining the patch package corresponding to the current installation package; downloading the patch package according to the information of the patch.

Claim 11 depends from independent claim 10 and recites similar subject matter.

Petitioner argues O'Neill's disclosures of requesting and receiving a server manifest, using the server manifest to determine if an update package should be downloaded, and downloading the update package teach the additional subject matter recited in claims 2 and 11. Pet. 64–65 (citing Ex. 1009, 13:1–3, 13:9–10, 13:15–17, 13:22–24, 13:27–33; Ex. 1003 ¶ 45). Petitioner argues that Waldmann discloses providing several delta-update packages but that Waldmann, Schuelein, and AAPA do not "explicitly

disclose a means to identify which specific update package to download when multiple versions of the update are available." Pet. 31–32 (citing Ex. 1004, 7:25–26, 21:15–21; Ex. 1003 ¶ 32). Petitioner argues that "[a] person of ordinary skill in the art would . . . have been motivated to combine the update query and retrieval process of O'Neill in order to provide a means to determine which of Waldmann's multiple update packages to download on the client device." Pet. 32 (citing Ex. 1003 ¶ 33).

Patent Owner argues that, "because the delta-update package of Waldmann is generated based on the difference between an old installation file and a *desired installation file*, the 'server manifest' of O'Neill is not needed in order to determine the latest version to be used (i.e., the desired installation file)." PO Resp. 53 (citing Ex. 2019 ¶ 76). According to Patent Owner, therefore, "[c]ombining these references would be an undesirable practice of adding redundant and unnecessary features together." PO Resp. 53. Patent Owner's argument, however, does not address Waldmann's disclosure that "[a] manufacturer can provide for several different delta-update packages when issuing one new version of hearing-device fitting-software package." Ex. 1004, 21:15–21. Petitioner argues, and we are persuaded, that the existence of several update packages would have motivated a person of ordinary skill in the art to use O'Neill's teachings to select from among those several packages. *See* Pet. 32.

Patent Owner also argues that a person of ordinary skill in the art would not have been motivated to combine Schuelein and O'Neill because "Schuelein sends information to a remote server so the remote server can perform an upgrade, while O'Neill sends a manifest to a client machine so it can determine the software version to which it needs to be updated." PO

Resp. 54 (citing Ex. 2019 ¶ 76). According to Patent Owner, "[t]ransferring a manifest of available patches in O'Neill is not desirable or necessary in light of Schuelein because Schuelein performs the upgrade remotely." PO Resp. 54. Patent Owner also argues that "[i]f a [person of ordinary skill in the art] were to add O'Neill to the combination of Waldmann and Schuelein described above, the resulting system would add a server manifest of the extraneous update patches produced by this illogical combination of art." PO Resp. 54–55 (citing Ex. 2019 ¶ 76).

Patent Owner's arguments rely on bodily incorporating particular teachings from one reference into another; however, the Court of Appeals for the Federal Circuit has

> consistently held . . . that "[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art."

MCM Portfolio LLC v. Hewlett-Packard Co., 812 F.3d 1284, 1294 (Fed. Cir. 2015) (quoting *In re Keller*, 642 F.2d 413, 425 (CCPA 1981)). Waldmann discloses that "[a] manufacturer can provide for several different delta-update packages" (Ex. 1004, 21:15–21), and O'Neill discloses a procedure to determine if a particular update package should be downloaded. Ex. 1009, 13:1–60, Fig. 2A. Based on these disclosures, we are persuaded by Petitioner's contention that a person of ordinary skill in the art would have been motivated to use O'Neill's teachings "to provide a means to determine which of Waldmann's multiple update packages to download on the client device." *See* Pet. 32.

We are persuaded by Petitioner's contentions and evidence that a person of ordinary skill in the art would have been motivated to combine the teachings of Waldmann, Schuelein, AAPA, and O'Neill and that the asserted combination teaches or renders obvious the subject matter of claims 2 and 11. *See* Pet. 31–32, 64–65. Having considered the full record developed during trial, we determine that Petitioner has proven by a preponderance of the evidence that claims 2 and 11 of the '520 patent are unpatentable under 35 U.S.C. § 103 as obvious over the combined teachings of Waldmann, Schuelein, AAPA, and O'Neill.

3. Claims 3–5, 12, and 13

Claims 3–5, 12, and 13 recite the use of Message-Digest Algorithm 5 (md5) values to select a particular patch package. For example, claims 3 and 12 recite, *inter alia*, "determin[ing] the patch package corresponding to the current installation package according to the relation when the md5 value of the current installation package is identical with the md5 value of one of the installation package in the relation." Petitioner relies on O'Neill's disclosure of using update signatures to determine if an update package should be downloaded and its disclosure of generating a signature using an md5 algorithm. Pet. 66–67 (citing Ex. 1009, 13:15–17, 13:22–24, 13:27–33, 38:38–44, 38:56–60; Ex. 1003 ¶¶ 45–46). O'Neill discloses that "client device 104 compares the update signature in the server manifest with that of the existing operational software present on the client device 104" to determine if the update package should be downloaded and installed. Ex. 1009, 13:25–33. O'Neill discloses that "a signature or hash value may be generated using a known MD5 algorithm" and also that "MD5 technology may be used to substantially guarantee that the downloaded

update package is the correct, unaltered data file by comparing the calculated MD5 signature or hash value with the MD5 signature contained in the update package, to thereby verify the integrity of the data file." Ex. 1009, 38:38–40, 38:55–61.

Claim 4 depends from claim 3 and recites "wherein the md5 value of the current installation package is obtained by performing the md5 for the current installation." Claim 5 depends from claim 3 and recites "wherein the md5 value of the current installation package is obtained from the customized information of the current installation package." Claim 13 depends from claim 12 and recites the two wherein clauses of claims 4 and 5 as alternatives.

For the subject matter of claim 4, Petitioner relies on O'Neill's disclosure of generating a signature using an md5 algorithm. Pet. 67–68 (citing Ex. 1009, 13:27–33, 38:38–44, 38:56–60). For the subject matter of claim 5, Petitioner argues "O'Neill discloses an 'expected digital signature *previously stored* in the electronic device.'" Pet. 68 (quoting Ex. 1009, 39:26–27). Petitioner argues the following:

> It would have been obvious to obtain the md5 value from the customized information portion of the current installation package since the md5 value itself is not part of the data for the underlying application, and because it is not application data it would have been obvious to a person of ordinary skill to obtain it from the other portion—the customized information portion—of the installation package as taught by APA.

Pet. 68 (citing Ex. 1003 ¶ 45; Ex. 1001, 1:42–44).

Patent Owner contends O'Neill does not teach "the md5 value of the current installation package is obtained from the customized information of the current installation package," as recited in claims 5 and 13. PO

Resp. 51–53. Patent Owner argues that "Petitioner conflates the MD5 hash with the 'digital signature' of O'Neill which is defined as 'a manufacturer designated information string that is used to authenticate the *source* of the update package.'" PO Resp. 52 (quoting Ex. 1009, 38:35–38) (citing Ex. 2019 ¶ 93). Although O'Neill states that a signature may be designated by a manufacturer, it also discloses a signature generated using an md5 algorithm, as is clear from the following passage: "In one embodiment the digital signature comprises a manufacturer designated information string that is used to authenticate the source of the update package 110. Additionally, as shown in state 1408, a signature or hash value may be generated using a known MD5 algorithm." Ex. 1009, 38:35–40. Petitioner relies on O'Neill's disclosure of a signature generated using an md5 algorithm. *See* Pet. 67–68. Thus, we disagree with Patent Owner's argument that Petitioner conflates the md5 hash with the digital signature.

Patent Owner also argues that, "[b]ecause the MD5 hash produces a fingerprint of a portion of data, an MD5 of a not-yet-generated update package would not exist on a client machine." PO Resp. 51–52 (citing Ex. 2019 ¶ 93). Claims 5 and 13, however, recite the "md5 value of the current installation package," not the "new installation package," which is generated in claims 1 and 10. Thus, claims 5 and 13 are not directed to "an MD5 of a not-yet-generated update package," as suggested by Patent Owner's argument. *See* PO Resp. 51–52.

We are persuaded by Petitioner's contention that "[i]t would have been obvious to obtain the md5 value from the customized information portion." *See* Pet. 68. In particular, O'Neill discloses a "digital signature previously stored in the electronic device" and also discloses that "a

signature . . . may be generated using a known MD5 algorithm." Ex. 1009, 38:38–40, 39:26–28. Furthermore, AAPA discloses that an "installation package of the application includes a data portion and a customized information portion." Ex. 1001, 1:42–43. Dr. Clark testifies that

> [a]n md5 hash value is not application data, *i.e.* it is not used by the underlying application, and thus it is not part of the data portion, so it would therefore be obvious to a person of ordinary skill to obtain it from the non-data portion, *i.e.* the customized information portion, of the installation package.

Ex. 1003 ¶ 45. In view of this evidence, Petitioner's contention that it would have been obvious to store the md5 value, which is not part of the data portion, in the other portion, i.e., the customized information portion, is rationally underpinned. *See* Pet. 68. Patent Owner does not dispute that the md5 hash value is not application data; rather, Patent Owner argues about encryption and comment fields for zip files. PO Sur-reply 23 ("The comment field of the zip file is where customized information portion of the installation file is stored."), 23–24 ("[T]he MD5 digital signature of O'Neill cannot be stored in the unencrypted customized information portion as is required by the '520 patent."). The '520 patent does not use the term "encrypt" or any derivative of the term, and O'Neill is not relied on for claims reciting zip files. Thus, we do not see the relevance of these arguments by Patent Owner.

We are persuaded by Petitioner's contentions and evidence that a person of ordinary skill in the art would have been motivated to combine the teachings of Waldmann, Schuelein, AAPA, and O'Neill and that the asserted combination teaches or renders obvious the subject matter of claims 3–5, 12, and 13. *See* Pet. 31–32, 65–68. Having considered the full record developed during trial, we determine that Petitioner has proven by a

preponderance of the evidence that claims 3–5, 12, and 13 of the '520 patent are unpatentable under 35 U.S.C. § 103 as obvious over the combined teachings of Waldmann, Schuelein, AAPA, and O'Neill.

III. CONTINGENT MOTION TO AMEND

Having determined that claims 1–8, 10–16, and 18–20 of the '520 patent are unpatentable, we address Patent Owner's contingent Motion to Amend.

A. Legal Standard

In an *inter partes* review, amended claims are not added to a patent as of right; rather, they must be proposed as a part of a motion to amend. 35 U.S.C. § 316(d). The Board must assess the patentability of proposed substitute claims "without placing the burden of persuasion on the patent owner." *Aqua Prods., Inc. v. Matal*, 872 F.3d 1290, 1328 (Fed. Cir. 2017) (en banc); *see Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 15 at 3–4 (PTAB Feb. 25, 2019) (precedential). Subsequent to the issuance of *Aqua Products*, the Federal Circuit issued a decision in *Bosch Automotive Service Solutions, LLC v. Matal*, 878 F.3d 1027 (Fed. Cir. 2017), as well as a follow-up order amending that decision on rehearing. *See Bosch Auto. Serv. Sols., LLC v. Iancu*, No. 2015-1928 (Fed. Cir. Mar. 15, 2018) (Order on Petition for Panel Rehearing).

In accordance with *Aqua Products*, *Bosch*, and *Lectrosonics*, the patent owner does not bear the burden of persuasion to demonstrate the patentability of the substitute claims presented in the motion to amend. Rather, ordinarily, "the petitioner bears the burden of proving that the proposed amended claims are unpatentable by a preponderance of the

evidence." *Bosch*, 878 F.3d at 1040 (as amended on rehearing); *see Lectrosonics*, Paper 15 at 3–4. In determining whether a petitioner has proven unpatentability of the substitute claims, the Board focuses on "arguments and theories raised by the petitioner in its petition or opposition to the motion to amend." *Nike, Inc. v. Adidas AG*, 955 F.3d 45, 51 (Fed. Cir. 2020). The Board itself also may justify any finding of unpatentability by reference to evidence of record in the proceeding. *Lectrosonics*, Paper 15 at 4 (citing *Aqua Products*, 872 F.3d at 1311 (O'Malley, J.)). Thus, the Board determines whether substitute claims are unpatentable by a preponderance of the evidence based on the entirety of the record, including any opposition made by the petitioner.

Notwithstanding the foregoing, the patent owner's proposed substitute claims must meet the statutory requirements of 35 U.S.C. § 316(d) and the procedural requirements of 37 C.F.R. § 42.121. *Lectrosonics*, Paper 15 at 4–8. Accordingly, the patent owner must demonstrate: (1) the amendment proposes a reasonable number of substitute claims; (2) the proposed claims are supported in the original disclosure (and any earlier filed disclosure for which the benefit of filing date is sought); (3) the amendment responds to a ground of unpatentability involved in the trial; and (4) the amendment does not seek to enlarge the scope of the claims of the patent or introduce new subject matter. *See* 35 U.S.C. § 316(d); 37 C.F.R. § 42.121.

B. Proposed Substitute Claims

Patent Owner proposes contingently substituting claims 21–40 for claims 1–20. Motion to Amend 1. As an initial matter, a motion to amend may "[c]ancel any challenged patent claim" or "[f]or each challenged claim, propose a reasonable number of substitute claims." 35 U.S.C. § 316(d)(1).

Claims 9 and 17 are not challenged in this *inter partes* review, and, therefore, Patent Owner may not propose substitute claims for claims 9 and 17. Thus, we dismiss Patent Owner's Motion to Amend as to proposed substitute claims 29 and 37, which Patent Owner proposes to substitute for original claims 9 and 17.

Petitioner does not dispute that Patent Owner has satisfied the four threshold requirements for a motion to amend identified above. *See generally* Opp. Amend. As to proposed substitute claims 21–28, 30–36, and 38–40, we are persuaded that Patent Owner proposes a reasonable number of substitute claims, namely one per challenged claim. We also are persuaded that Patent Owner's proposed amendments respond to a ground of unpatentability involved in the trial. *See* Motion to Amend 11–12. Regarding support for the substitute claims and whether they enlarge the scope of the current patent claims, as mentioned, Petitioner has not challenged Patent Owner's amendments on that basis, and in light of our findings below, we do not need to independently analyze those issues.

Below, we address the patentability of the proposed substitute claims over the cited prior art. In particular, our analysis focuses on the parties' dispute regarding whether the proposed substitute claims are unpatentable based on the same grounds as their respective challenged claims, specifically whether proposed substitute claims 21, 27, 28, 30, 35, 36, and 38 (which correspond, respectively, to claims 1, 7, 8, 10, 15, 16, and 18) would have been obvious over Waldmann, Schuelein, and AAPA; whether proposed substitute claims 26, 34, 39, and 40 (which correspond, respectively, to claims 6, 14, 19, and 20), would have been obvious over Waldmann, Schuelein, AAPA, and ZIP Format; and whether proposed substitute

claims 22–25 and 31–33 (which correspond, respectively, to claims 2–5 and 11–13) would have been obvious over Waldmann, Schuelein, AAPA, and O'Neill. *See, e.g.*, Motion to Amend 11–23; Opp. Amend 1–23.

Proposed substitute claim 21 is illustrative of the proposed substitute independent claims, and is reproduced below, with underlining to indicate language added to original claim 1 and double brackets or strikethrough to indicate language removed from original claim 1.

> 21. A method for upgrading an application, comprising:
>
> obtaining a patch package corresponding to a current installation package of an application, the current installation package comprising a customized information portion and a data portion;
>
> removing [[a]] the customized information portion from the current installation package to obtain the ~~and obtaining a~~ data portion of the current installation package, the current installation package no longer containing the customized information portion after the removing;
>
> generating a data portion of a new installation package according to the patch package and the data portion of the current installation package;
>
> obtaining the new installation package by adding the customized information portion to the data portion of the new installation package; and
>
> installing the new installation package.

Motion to Amend 26. Proposed substitute claims 30 and 38, corresponding respectively to independent claims 10 and 18, recite similar additional limitations.

As can be seen from the edits to the claim language, Patent Owner proposes three changes to claim 1, and as explained below, none of these changes patentably distinguishes the claim over the prior art of record. The first change is that proposed substitute claim 21 recites "the current

installation package comprising a customized information portion and a data portion." This is disclosed by AAPA, which, as discussed above in § II.D.4.b.i, states that "[c]urrently, the installation package of the application includes a data portion and a customized information portion." Ex. 1001, 1:42–43.

The second and third changes are reflected in the "removing" step, which recites "removing the customized information portion from the current installation package to obtain the data portion of the current installation package, the current installation package no longer containing the customized information portion after the removing." Thus, in proposed substitute claim 21, the removing is performed to obtain the data portion, whereas claim 1 recites "removing a customized information portion . . . and obtaining a data portion." Furthermore, Patent Owner's proposed substitute claim 21 expressly states that after the removing the current installation package no longer contains the customized information portion. This is similar to Patent Owner's proposed construction for "removing" "to mean that the customized information portion in question is taken from the installation package so that it is no longer present in the installation package." PO Resp. 15; *see* Sur-reply Amend 5 ("'No longer present' is the same as 'no longer containing.'"). Patent Owner's arguments in support of the Motion to Amend are the same in substance as its arguments in the Response based on its proposed claim construction for "removing." *See* Motion to Amend 9–17. As discussed above in § II.D.4.b.i, we determine that the subject matter of claim 1 would have been obvious under Patent Owner's proposed construction for "removing." For the same reasons, Patent Owner's amendments do not patentably distinguish over the prior art.

As discussed above in § II.D.4.b.i, AAPA establishes that an installation package has two parts: a data portion and a customized information portion. Ex. 1001, 1:42–43 ("Currently, the installation package of the application includes a data portion and a customized information portion."). AAPA establishes that the data portion is a separate entity that is obtained so that operations can be performed on it independent of the customized information portion. In particular, AAPA states the following: "In the increment upgrade solution, an old installation package and a new installation package are both binary file, differences between the old installation package and the new installation package are found out by using a bsdiff tool, and a patch package is obtained." Ex. 1001, 1:30–34. AAPA further states that "[t]he bsdiff algorithm is performed only for the data portion." Ex. 1001, 1:44–47. Thus, Patent Owner's proposed amendment to recite removing the customized information portion "to obtain the data portion" does not distinguish over AAPA, which already discloses obtaining the data portion so that the bsdiff algorithm can be performed.

Furthermore, as discussed above in § II.D.4.b.i, AAPA confirms that the data portion is simply the installation package without the customized information portion. Therefore, as discussed above, removing the customized information portion from the installation package so that "the current installation package no longer contain[s] the customized information portion after the removing" would have been obvious to a person of ordinary skill in the art because it would have simply involved considering the data portion to be the installation package without the customized information portion. Stated differently, a customized information portion and a data portion together make up an installation package. Ex. 1001, 1:42–43

("Currently, the installation package of the application includes a data portion and a customized information portion."). The data portion by definition, therefore, is the installation package without the customized information portion.

Patent Owner argues that "the explicit language of the proposed substitute claims requires that the subset (customized information portion) is no longer stored with the full set that makes up the installation package file." Sur-reply Amend 5. In the context of computer storage, it is not entirely clear what it means that certain information is not "stored with" other information. As noted above in § II.D.4.b.i, in response to our statement in the Institution Decision that, "in the context of computer technology, once a subset of data is removed by setting it aside from a larger set of data, it may involve little more than a labeling exercise to deem the set-aside data no longer present in the original larger set of data" (Dec. on Inst. 9), Patent Owner argues that "[w]hether this non-association is accomplished by relabeling pointers to data or by an operation similar to a 'cut and paste' is not detailed in the '520 patent" (PO Sur-reply 12). Thus, Patent Owner acknowledges that the '520 patent does not explain how removal occurs or what must happen to data to deem that the data are removed, but Patent Owner also acknowledges that "relabeling pointers to data" would suffice to remove data. Based on the plain language of the proposed substitute claims, the constituent parts of the current installation package—the customized information portion and the data portion—are used to create a new installation package, and, therefore, both of these portions continue to exist after the removal step. Indeed, they must exist to complete the upgrading process. Patent Owner's proposed amendment, therefore, rests entirely on a

label for data. Prior to removal, the current installation package has two portions. After removal, the current installation package is simply one of the portions. As discussed above in § II.D.4.b.i, the removal does not change the content of either the customized information portion or the data portion. We conclude that this relabeling of data would have been obvious to a person of ordinary skill in the art.

In response to Patent Owner's Motion to Amend, Petitioner argues the following:

> To the extent the limitation "installation package no longer containing the customized information portion" is construed to mean the customized information portion is deleted, this limitation is rendered obvious by the combination of Waldmann's disclosure of deleting old versions (which would include any customized information along with the data portion, as taught by APA) and Schuelein's identifying, saving, and transferring customized information.

Opp. Amend 11 (citing Ex. 1003 ¶ 25). Patent Owner argues that "Waldmann merely deletes or overwrites a complete old installation on a client machine *entirely* before a new installation package is installed" but "describes no selective removal of a customized information portion of an installation file from the larger set of data that makes up the installation file." Reply Amend 8. We find that deleting an entire file teaches deleting a portion of that file and, therefore, that deleting the current installation file teaches deleting the customized information portion such that the "current installation package no longer contain[s] the customized information portion." Thus, we are persuaded by Petitioner's argument that the subject matter recited in the proposed substitute claims would have been obvious to a person of ordinary skill in the art even if it requires deleting the customized information portion. *See* Opp. Amend 11 (citing Ex. 1003 ¶ 25).

Furthermore, Patent Owner's proposed amendment does not limit the claims to requiring removing *only* the customized data portion, as suggested by Patent Owner's "selective removal" argument. *See* Reply Amend 8. Even if we were to interpret Patent Owner's proposed substitute claims to be so limited, the record evidence demonstrates that such a requirement would not render the proposed subject matter patentable. Specifically, we disagree with Patent Owner's assertion that Waldmann does not describe such "selective removal." Reply Amend 8. For example, Waldmann discloses creating an updated installation-software package from an old installation-software package "by deleting portions of said old installation-software package and/or replacing portions of said old installation-software package." Ex. 1004, 10:24–11:1, *quoted in* Pet. 42, *cited in, inter alia*, Pet. 38. Although Waldmann does not discuss specifically removing a "customized information portion" from a file, Waldmann's disclosure demonstrates that selective removal of a portion of a file was well within the knowledge and skill of a person of ordinary skill in the art, regardless of the content of the data in that portion. *See Philips*, 948 F.3d at 1337.

For the foregoing reasons and for the reasons discussed in our unpatentability analysis of claim 1, we conclude that the subject matter of proposed substitute claim 21 would have been obvious based on the combined teachings of Waldmann, Schuelein, and AAPA. Proposed substitute independent claims 30 and 38 recite similar additional subject matter, and we conclude that the subject matter of these proposed substitute claims also would have been obvious based on the combined teachings of Waldmann, Schuelein, and AAPA.

The proposed substitute dependent claims recite the same subject matter as the original dependent claims but are amended to change their dependency to reflect the proposed substitute independent claims. Therefore, the proposed substitute dependent claims are unpatentable for reasons discussed above with respect to the proposed substitute independent claims and the original dependent claims. More particularly, proposed substitute dependent claims 27, 28, 35, and 36, which correspond, respectively, to claims 7, 8, 15, and 16, are unpatentable as obvious over Waldmann, Schuelein, and AAPA; proposed substitute dependent claims 26, 34, 39, and 40, which correspond, respectively, to claims 6, 14, 19, and 20, are unpatentable as obvious over Waldmann, Schuelein, AAPA, and ZIP Format; and proposed substitute dependent claims 22–25 and 31–33, which correspond, respectively, to claims 2–5 and 11–13, are unpatentable as obvious over Waldmann, Schuelein, AAPA, and O'Neill.

Having considered the full record developed during trial, we deny Patent Owner's Motion to Amend as to proposed substitute claims 21–28, 30–36, and 38–40 because they are unpatentable under 35 U.S.C. § 103.

IV. WEIGHT OF TESTIMONY

Patent Owner argues that "Petitioner's expert's testimony should be afforded little weight in view of certain omissions and misstatements in Dr. Clark's *curriculum vitae* ('CV')." PO Resp. 56. In particular, Patent Owner argues that Dr. Clark's CV "appears to be missing his current employer, to have misstated his adjunct faculty position as current, and omitted several legal cases for which he was been retained." PO Resp. 58. The only misstatement Patent Owner identifies in Dr. Clark's CV is the statement that

he "serves" (present tense) as an adjunct professor despite his testimony at deposition that he is not currently an adjunct professor. PO Resp. 56 (citing Ex. 1004, 40 (third page of CV); Ex. 2016, 23:7–17). Dr. Clark's CV elsewhere states that he "has served . . . as an adjunct professor." Ex. 1003, 38 (first page of CV). Thus, we see the use of the present tense later in the CV to be akin to a typo.

Patent Owner also notes that Dr. Clark omitted certain things from his CV, such as his current job as CEO of Clear Guide Medical and additional legal cases for which he had been retained. PO Resp. 57 (citing Ex. 2016, 4:20–6:23, 7:18–8:9, 22:15–24:7). We do not see how these omissions should impact his credibility under the circumstances of this case. His CV lists "LEGAL CASES," but it does not represent that this list includes every legal case for which he has been retained, and we are aware of no requirement to list all such engagements. As for his current employment, Patent Owner does not assert that the employment listing misstates anything but only that it omits a position he currently holds. Most importantly, Patent Owner, through its counsel, had the opportunity to depose Dr. Clark, and, at the beginning of the deposition, Dr. Clark volunteered that he works for Clear Guide Medical in response to the question "Where do you work?" Ex. 2016, 4:20–22. This was the third question after "Where do you live?" and "What's your home address?" Ex. 2016, 4:7–18. Thus, we perceive no attempt by Dr. Clark to deceive Patent Owner or the Board as to his current employment.

Patent Owner also argues that Dr. Clark, throughout his declaration and testimony, "asserts that the knowledge of one of ordinary skill in the art will suffice where the prior art fails to disclose the claim limitations" and,

therefore, applies the wrong standard to his obviousness analysis. PO Resp. 24–25. Furthermore, Patent Owner argues that, "because an *inter partes* review may only be requested 'on the basis of prior art consisting of patents or printed publications,' 35 U.S.C. § 311(b), expert testimony cannot take the place of disclosure from patents or printed publications." PO Resp. 24–25. In so arguing, however, Patent Owner, does not direct us to declaration testimony in which Dr. Clark supplies allegedly missing limitations without evidence from the prior art. *See* PO Resp. 23–25. In any event, as evident from our analysis of the claimed and proposed subject matter, we do not rely on Dr. Clark's testimony alone to supply missing limitations.

V. PATENT OWNER'S MOTION TO EXCLUDE

Patent Owner moves to exclude Exhibit 1013, which is U.S. Patent No. 9,069,885 B1, and certain portions of Exhibit 1014, which is the transcript of the deposition of Patent Owner's declarant, Mr. Jonathan Hochman. Paper 37.[11] Because we do not rely on Exhibit 1013 or any of

[11] Before the oral argument, Patent Owner objected to two of Petitioner's demonstrative slides as allegedly "[c]ontain[ing] new evidence – testimony previously not developed, discussed, or explained in any paper before the Board." Paper 40. The two slides contain passages from Exhibit 1014 that are the subject of the motion to exclude. During oral argument, we stated that "we will not foreclose the presentation of those slides" and that "[w]e will rule on the motion to exclude in due course." Tr. 4:14–16. We also reminded the parties that "demonstratives are not evidence." Tr. 4:16–18; *see also* Paper 35 ("The parties are reminded that the demonstrative exhibits presented in this case are not evidence and are intended only to assist the parties in presenting their oral argument to the panel.").

the portions of Exhibit 1014[12] that Patent Owner seeks to exclude, we dismiss Patent Owner's motion as moot.

[12] After oral argument, we allowed the parties to file a paper identifying in the oral hearing transcript where any new alleged evidence was cited during the oral hearing. Paper 42. Patent Owner cited a passage from the deposition of its declarant Mr. Hochman (Exhibit 1014, 80:2–16) that Patent Owner contends was not cited in any substantive paper. Paper 44. We do not rely on this portion of Exhibit 1014 in any manner in this Decision.

VI. CONCLUSION[13]

For the reasons discussed above, we determine Petitioner has proven, by a preponderance of the evidence, that the challenged claims are unpatentable, as summarized in the following table:

Claims	35 U.S.C. §	References/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 7, 8, 10, 15, 16, 18	103	Waldmann, Schuelein, AAPA	1, 7, 8, 10, 15, 16, 18	
6, 14, 19, 20	103	Waldmann, Schuelein, AAPA, ZIP Format	6, 14, 19, 20	
2–5, 11–13	103	Waldmann, Schuelein, AAPA, O'Neill	2–5, 11–13	
Overall Outcome			1–8, 10–16, 18–20	

[13] Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. *See* 84 Fed. Reg. 16654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

We also determine that proposed substitute claims 21–28, 30–36, and 38–40 are unpatentable and deny the motion to amend as to these claims, as summarized in the following table:

Motion to Amend Outcome	**Claims**
Original Claims Cancelled by Amendment	
Substitute Claims Proposed in the Amendment	21–40
Substitute Claims: Motion to Amend Granted	
Substitute Claims: Motion to Amend Denied	21–28, 30–36, 38–40
Substitute Claims: Not Reached	29, 37

VII. ORDER

Accordingly, it is:

ORDERED that claims 1–8, 10–16, and 18–20 of the '520 patent have been shown to be unpatentable;

FURTHERED ORDERED that Patent Owner's Contingent Motion to Amend is *dismissed* as to proposed substitute claims 29 and 37 and *denied* as to proposed substitute claims 21–28, 30–36, and 38–40;

FURTHERED ORDERED that Patent Owner's Motion to Exclude is *dismissed*; and

FURTHERED 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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