

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BANK OF AMERICA, N.A.,
Petitioner,

v.

NANT HOLDINGS IP, LLC,
Patent Owner.

IPR2021-01304
Patent 8,478,036 B2

Before JAMESON LEE, THOMAS L. GIANNETTI, and
STEPHEN E. BELISLE, *Administrative Patent Judges*.

BELISLE, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining No Challenged Claims Unpatentable
35 U.S.C. § 318(a)
Denying Petitioner's Motion to Exclude Evidence
37 C.F.R. § 42.64(c)

I. INTRODUCTION

Bank of America, N.A. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting an *inter partes* review of claims 1, 10, 12, 13, and 15 (“Challenged Claims”) of U.S. Patent No. 8,478,036 B2 (Ex. 1001, “the ’036 patent”). Nant Holdings IP, LLC (“Patent Owner”) filed a Preliminary Response to the Petition (Paper 6, “Prelim. Resp.”; *see* Paper 4, 2). In addition, with prior authorization from the Board, the parties filed supplemental briefing concerning the Preliminary Response. Paper 7 (“Reply”); Paper 8 (“Sur-Reply”). We instituted an *inter partes* review of claims 1, 10, 12, 13, and 15 of the ’036 patent on all grounds of unpatentability alleged in the Petition. Paper 10 (“Institution Decision” or “Dec.”).

After institution, Patent Owner filed a Response. Paper 25¹ (“PO Resp.”). Petitioner filed a Reply. Paper 24 (“Pet. Reply”). Patent Owner filed a Sur-Reply. Paper 30 (“PO Sur-Reply”). Petitioner also filed a Motion to Exclude Evidence, in which Petitioner moves to exclude some or all of paragraphs 22–27, 29–42, 44, 46–49, 51–53, and 55 of the Supplemental Declaration of Chandrajit Bajaj, Ph.D. (Ex. 2007), Patent Owner’s expert. Paper 34 (“Mot. Excl.”). Patent Owner filed an Opposition to Petitioner’s Motion to Exclude Evidence (Paper 35), and Petitioner filed a Reply to Patent Owner’s Opposition to Petitioner’s Motion to Exclude Evidence (Paper 36). We held a hearing on November 10, 2022, and a

¹ Patent Owner filed a Response (Paper 16 (expunged)) and a corrected Response (Paper 25). We reference the corrected Response filed on August 11, 2022.

transcript of the consolidated hearing appears in the record. Paper 41 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. Under the applicable evidentiary standard, Petitioner has the burden to prove unpatentability by a preponderance of the evidence. *See* 35 U.S.C. § 316(e) (2018); 37 C.F.R. § 42.1(d) (2022). “Preponderance of the evidence means the greater weight of evidence, evidence which is more convincing than the evidence which is offered in opposition to it.” *United States v. C.H. Robinson Co.*, 760 F.3d 1376, 1383 (Fed. Cir. 2014) (internal quotations omitted). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

For the reasons discussed below, we determine Petitioner has not established by a preponderance of the evidence that any of claims 1, 10, 12, 13, and 15 of the ’036 patent is unpatentable.

II. BACKGROUND

A. *Related Matters*

The parties indicate that the ’036 patent, along with seven other patents, are involved in one U.S. district court action, namely, *NantWorks, LLC and Nant Holdings IP, LLC v. Bank of America Corporation and Bank of America, N.A.*, No. 2:20-cv-07872 (C.D. Cal.) (“District Court Case”). Pet. 64; Paper 4, 2. Petitioner also states, “All of the patents claim priority to Provisional Application Nos. 60/246,295 and 60/317,521. There appears to be no pending application that claims priority to those two applications.” Pet. 65.

The following *inter partes* review proceedings involve patents related to the ’036 patent: IPR2021-01080 (US 8,463,030 B2), IPR2021-01081

(US 7,881,529 B2), IPR2021-01332 (US 9,324,004 B2), IPR2021-01333 (US 7,899,252 B2), IPR2021-01388 (US 8,520,897 B2), and IPR2021-01389 (US 9,031,278 B2).

B. The '036 Patent

The '036 patent is titled “Image Capture and Identification System and Process,” and issued on July 2, 2013, from U.S. Patent Application No. 13/410,577, filed March 2, 2012, and claims priority through a series of continuing applications to U.S. Provisional Patent Applications Nos. 60/317,521, filed September 5, 2001, and 60/246,295, filed November 6, 2000. Ex. 1001, codes (10), (21), (22), (45), (54), (60).

The '036 patent describes “[t]raditional methods” for linking objects to digital information that involve applying a barcode, a radio or optical transceiver or transmitter, or some other means of identification to the object, as well as modifying the image or object so as to encode detectable information. Ex. 1001, 3:29–35. However, according to the '036 patent, “[t]here is a need to determine the position and orientation of known objects based only on imagery of the objects,” “without modification or disfigurement of the object, [and] without the need for any marks, symbols, codes, barcodes, or characters on the object.” *Id.* at 1:36–51. The '036 patent states that it responds to this need by describing “a system and process for identifying digitally captured images without requiring modification to the object.” *Id.* at 4:20–22. But notwithstanding this additional capability, the '036 patent explicitly discloses that “*the present invention also can detect, decode, and identify images and objects based on traditional symbols* which may appear on the object, such as alphanumeric

characters, *barcodes*, or 2-dimensional matrix codes.” *Id.* at 3:44–52 (emphases added).

Figures 1 and 2 of the ’036 patent, reproduced below, collectively illustrate an embodiment of the patent. The following description refers to both figures.

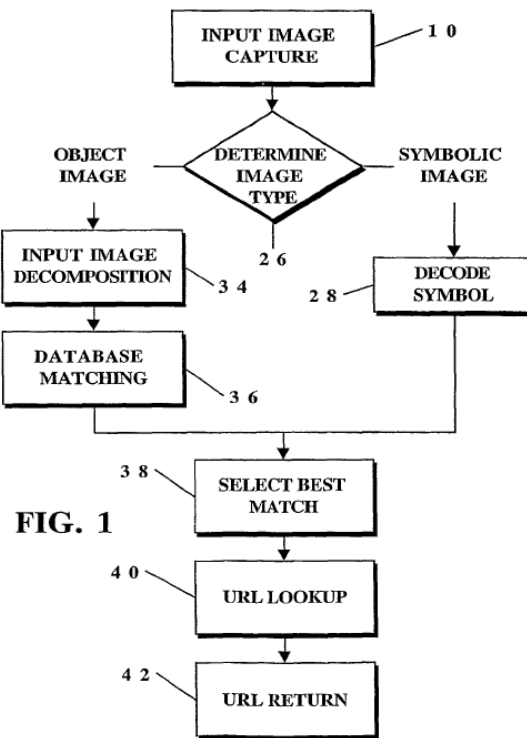


Figure 1 depicts a block diagram top-level algorithm flowchart.

Ex. 1001, 4:37–38, Fig. 1.

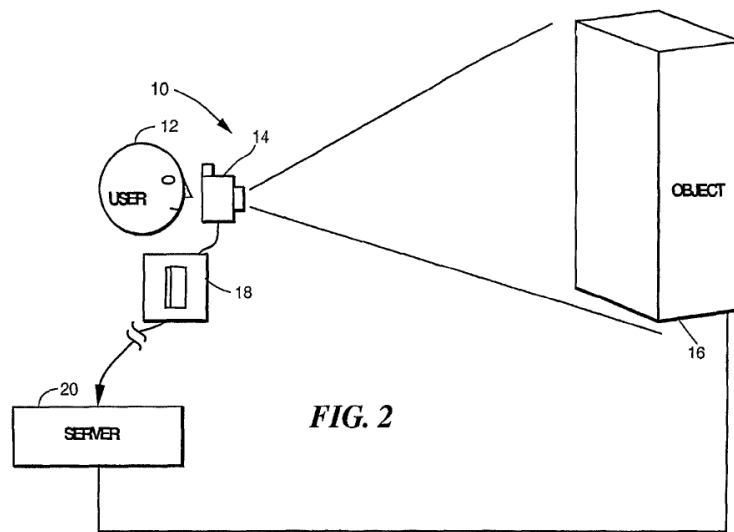


Figure 2 depicts an idealized view of image capture.

Ex. 1001, 4:39, Fig. 2.

According to the '036 patent, for image capture 10, user 12 utilizes a computer, mobile telephone, personal digital assistant, or other similar device 14 equipped with an image sensor (such as a CCD or CMOS digital camera). Ex. 1001, 5:23–26. User 12 aligns the sensor of image capture device 14 with object 16 of interest. *Id.* at 5:26–27. The linking process is then initiated, and device 14 captures digital image 18 of the scene at which it is pointed. *Id.* at 5:27–33. Image 18 is represented as three separate 2-D matrices of pixels, corresponding to the raw RGB (Red, Green, Blue) representation of the input image. *Id.* at 5:33–39. Image 18 is subsequently transferred to image processor/server 20. *Id.* at 5:41–49.

Image type determination 26 is accomplished with a discriminator algorithm which operates on input image 18 and determines whether the input image contains recognizable symbols, such as barcodes, matrix codes, or alphanumeric characters. Ex. 1001, 5:50–54. If such symbols are found, image 18 is sent to decode symbol process 28. *Id.* at 5:54–55. In decode

symbol process 28, image 18 is analyzed to determine the location, size, and nature of the symbols. *Id.* at 5:66–67. The symbols are analyzed according to their type, and their content information is extracted. *Id.* at 5:67–6:3.

Image 18 may also or alternatively contain an object of interest, and may therefore also or alternatively be sent to the object image branch of the process flow. Ex. 1001, 5:55–65. In input image decomposition process 34, a “decomposition” of a high-resolution input image into several different types of quantifiable salient parameters is performed. *Id.* at 6:4–15. According to the ’036 patent, this allows for multiple independent convergent search processes of the database to occur in parallel in database matching 36, which “greatly improves image *match* speed and *match* robustness.” *Id.* at 6:7–10 (emphases added).

C. Illustrative Claim

The ’036 patent includes nineteen claims, of which claims 1, 10, 12, 13, and 15 are challenged. Independent claim 1 is illustrative and reproduced below.

1. A content provisioning system comprising:
a target database storing known targets of different types and recognition parameters associated with the known targets;
an identification platform coupled with the target database, and that:
communicates with a mobile device capable of acquiring a digital representation of a scene containing at least a portion of a target;
receives the digital representation from the mobile device;
and
recognizes the target as a known target from the target database based on comparing parameters derived from the digital representation to recognition parameters associated with the known targets; and

a content service coupled with the identification platform, and
that:
obtains content information related to the known target;
and
sends the content information to at least one of the
identification platform and the mobile device.

Ex. 1001, 24:2–22.

D. Evidence of Record

Petitioner relies on the following patent evidence.

Name	Document	Exhibit
Ogasawara	6,512,919 B2	1005
Bolle	5,546,475	1006

Pet. 8.

Petitioner also relies upon the Declaration of Jeffrey J. Rodriguez, Ph.D. (Ex. 1003) and the Declaration of Dr. Rodriguez in support of Petitioner’s Reply (Ex. 1050).

Patent Owner relies upon the Declaration of Chandrajit Bajaj, Ph.D. (Ex. 2001) and the Supplemental Declaration of Dr. Bajaj (Ex. 2007).

E. Asserted Challenge to Patentability

We instituted *inter partes* review of claims 1, 10, 12, 13, and 15 of the ’036 patent on the following ground asserted by Petitioner.

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1, 10, 12, 13, 15	103 ²	Ogasawara, Bolle

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103. Because the ’036 patent was filed before March 16, 2013, the effective date of the relevant amendment, the pre-AIA version of § 103 applies.

Pet. 8.

III. PATENTABILITY

A. *Applicable Law*

Petitioner challenges the patentability of claims 1, 10, 12, 13, and 15 of the '036 patent on the sole ground that the claims would have been obvious under 35 U.S.C. § 103 in light of the combination of Ogasawara and Bolle. To prevail in its challenges to the patentability of the claims, Petitioner must establish unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). “In an [*inter partes* review], the petitioner has the burden from the onset to show *with particularity* why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)) (emphasis added). This burden never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)) (discussing the burden of proof in *inter partes* review).

A claim is unpatentable under 35 U.S.C. § 103 if “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art;

(2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) when of record, objective evidence of obviousness or non-obviousness, i.e., secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). Secondary considerations may include the following: “commercial success, long felt but unsolved needs, failure of others, etc.”³ *Id.* The totality of the evidence submitted may show that the challenged claims would not have been obvious to one of ordinary skill in the art. *In re Piasecki*, 745 F.2d 1468, 1471–72 (Fed. Cir. 1984). When evaluating a combination of teachings, we must also “determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)); see *Regents of Univ. of Cal. v. Broad Inst., Inc.*, 903 F.3d 1286, 1291 (Fed. Cir. 2018) (“An obviousness determination requires finding that [an ordinarily skilled artisan] would have been motivated to combine or modify the teachings in the prior art and would have had a reasonable expectation of success in doing so.”).

The Supreme Court has made clear that we apply “an expansive and flexible approach” to the question of obviousness. *Id.* at 415. Whether a patent claiming a combination of prior art elements would have been obvious is determined by whether the improvement is more than the predictable use of prior art elements according to their established functions. *Id.* at 417. To reach this conclusion, however, requires more than a mere showing that the prior art includes separate references covering each separate limitation in a claim under examination. *Unigene Labs., Inc. v.*

³ Patent Owner did not present any evidence or arguments directed to secondary considerations during this proceeding.

Apotex, Inc., 655 F.3d 1352, 1360 (Fed. Cir. 2011). Rather, obviousness requires the additional showing that a person of ordinary skill at the time of the invention would have selected and combined those prior art elements in the normal course of research and development to yield the claimed invention. *Id.* “To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). “Whether the prior art discloses a claim limitation, whether a skilled artisan would have been motivated to modify or combine teachings in the prior art, and whether she would have had a reasonable expectation of success in doing so are questions of fact.” *Univ. of Strathclyde v. Clear-Vu Lighting LLC*, 17 F.4th 155, 160 (Fed. Cir. 2021).

We analyze the challenges presented in the Petition in accordance with the above-stated principles.

B. Level of Ordinary Skill in the Art

Petitioner contends that a person of ordinary skill in the art, at the time of the invention of the ’036 patent:

would have had a range of knowledge roughly equivalent to the knowledge and/or training of a person holding the degree of Bachelor of Science in Electrical Engineering, Computer Science, Computer Engineering, or equivalent, and one to two years of experience working with image processing, image recognition, or a related field. . . . Individuals with additional education or additional practical experience could still be of ordinary skill in the art if that additional aspect compensates for a deficit in the other aspect of the requirements stated above.

Pet. 27 (citing Ex. 1003 ¶¶ 46–47).

Patent Owner does not present an alternative definition of the skilled artisan, and does not dispute Petitioner's definition. See PO Resp. 17 ("For purposes of this IPR, Patent Owner does not contend that an alternative level of ordinary skill in the art should be applied.").

In determining the level of ordinary skill in the art, various factors may be considered, including the "type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field." *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citation omitted). The level of ordinary skill in the art also is reflected by the prior art of record. See *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

Considering the subject matter of the '036 patent, the background technical field, the prior art, and Petitioner's unopposed proposed definition of the skilled artisan, we apply the level of skill set forth above, which also is consistent with the testimony of Dr. Rodriguez (Ex. 1003 ¶¶ 46–47).

Regardless, neither party argues that the outcome of this case would differ based on our adoption of any particular definition of the level of ordinary skill in the art.

C. Claim Construction

We construe claims "using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent." 37 C.F.R.

§ 42.100(b); *see also Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

In this context, claim terms “are generally given their ordinary and customary meaning” as understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips*, 415 F.3d at 1312–13; *see CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (There is “a ‘heavy presumption’ that a claim term carries its ordinary and customary meaning.”). “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17). Extrinsic evidence is “less significant than the intrinsic record in determining ‘the legally operative meaning of claim language.’” *Phillips*, 415 F.3d at 1317.

Only those claim 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) (stating that “we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

Petitioner asserts that the parties have “offered competing constructions for two terms in the Challenged Claims before the district court.” Pet. 34. Petitioner argues “the prior art invalidates the Challenged Claims under any reasonable construction of the terms, and claim

construction is therefore unnecessary [for purposes of this Petition].”

Pet. 34. Patent Owner submits proposed constructions for certain limitations, but otherwise contends it applies the “plain and ordinary meaning” for limitations in this proceeding. PO Resp. 17–23.

1. Recognizes Limitation

In the pre-institution phase, the parties disputed the meaning of the limitation “recognizes the target as a known target from the target database based on comparing parameters derived from the digital representation to recognition parameters associated with the known targets,” as recited in independent claim 1. *See* Dec. 17–19. Hereinafter, this limitation is referred to as the “Recognizes Limitation.”

After filing of the Petition and Preliminary Response, the district court in the District Court Case entered a *Markman* order construing the Recognizes Limitation, among others. *See* Ex. 2006, 16–18, 21–22.⁴ Specifically, the court construed the Recognizes Limitation to mean “recognizes the target as a known target from the target database based on comparing parameters derived from the digital representation to recognition parameters associated with the known targets *to find a match*.” Ex. 2006, 21–22 (emphasis added). As explained in our Institution Decision (Dec. 17–19), we have reviewed the district court’s reasoning, as well as the ’036 patent and other evidence of record before us, and agree that for reasons given by the district court, the Recognizes Limitation should be given the same construction as determined by the district court. Neither

⁴ Unless otherwise specified, citations to exhibits use the page numbers assigned by the parties, not the original page numbers.

party since has urged (or persuaded) us to revise this construction. Based on the complete record before us, we continue to construe the Recognizes Limitation to mean “recognizes the target as a known target from the target database based on comparing parameters derived from the digital representation to recognition parameters associated with the known targets to find a match.” See Dec. 17–19; Ex. 2006, 21–22. Both parties adopt this construction for purposes of their post-institution arguments in this case. See PO Resp. 18–19 (“Patent Owner and its expert apply this claim construction in their analysis in the remainder of this IPR, but do not necessarily agree it is correct.”); see *generally* Pet. Reply (arguing “matching” as per this construction); Pet. (same).

2. “*a digital representation*”

Independent claim 1 recites the limitation “a digital representation.” Ex. 1001, 24:9. Patent Owner asserts:

Claim 1 of the ’036 patent specifies “a digital representation of a scene containing at least a portion of a target.” Ex. 1001 (’036 patent) at cl. 1. Subsequent claim limitations refer to “***the digital representation***,” the antecedent basis of which is “***a digital representation*** of a scene containing at least a portion of a target.” *E.g., id.* (“receives ***the digital representation*** from the mobile device” and “comparing parameters derived from ***the digital representation*** to recognition parameters associated with the known targets”).

These terms should be construed to refer to the same, single digital representation, such as a single image or a single video stream. Ex. 2007 (Supplemental Declaration of Chandrajit Bajaj, Ph.D.) (“Bajaj”) ¶ 16. Because “the” is a singular modifier, its usage to qualify “the digital representation” therefore limits that digital representation to being a single digital representation. *Id.* ¶ 17 [other citations omitted].

PO Resp. 19.

Petitioner does not propose a construction for “a digital representation” or “the digital representation.” Instead, Petitioner states:

Ogasawara combined with Bolle teaches “acquiring a digital representation of a scene,” “receiv[ing] the digital representation,” and “recogniz[ing] the target as a known target . . . based on . . . the digital representation” (Ex. 1001, 24:8–15), both under the terms’ plain and ordinary meaning and under PO’s proposed construction that the claimed “digital representation” refers to the “same, single digital representation.” POR, 19, 23, 57–58.

Pet. Reply 3. Petitioner does not identify specifically what it contends is the plain and ordinary meaning of “a digital representation” or “the digital representation.” Petitioner does, however, explain why it believes the prior art still satisfies Patent Owner’s proposed construction for “a digital representation” and “the digital representation.” According to Petitioner, analyzing one digital representation, a single digital representation, does not preclude involvement in the analysis of information from a second digital representation. Pet. Reply 3–10. Thus, in Petitioner’s view, “a digital representation” and “the digital representation” are met even under Patent Owner’s proposed construction.

In its Sur-Reply, Patent Owner clarifies that, under Patent Owner’s proposed construction, “the receiving, acquiring and recognizing steps must occur on a **single** digital representation (*i.e.* an image); the claims exclude processing that occurs across multiple images.” PO Sur-Reply 25. This dispute between the parties requires resolution. For reasons discussed below, we disagree with Patent Owner.

Patent Owner is correct that the antecedent basis in claim 1 for “the digital representation” is the earlier recited “a digital representation.” Patent Owner is incorrect, however, in characterizing “the” as a singular

modifier. The definite article “the” can be used to modify something plural, e.g., “the digital representations.” Although in claim 1, “the” is used to modify a “digital representation,” that does not help the Patent Owner, because nothing in the claim excludes the involvement of additional digital representations while one “digital representation” is analyzed. Patent Owner points to nothing in claim 1 which restricts the analyzing to “only” one digital representation or “no more” than one digital representation, and we see none.

Further, claim 1 uses the non-limiting phrase “comprising,” which creates a presumption that the claim is not limited to only those elements expressly recited in the claim. *Crystal Semiconductor Corp. v. TriTech Microelectronics Int’l, Inc.*, 246 F.3d 1336, 1348 (Fed. Cir. 2001).

We recognize that the only embodiment described in the specification of the ’036 patent analyzes only a single digital representation, but we are not required to construe the claim as limited to just that embodiment.

Innova/Pre Water, Inc. v. Safari Water Filtration Systems, Inc., 381 F.3d 1111, 1121–22 (Fed. Cir. 2004). Such a construction is neither encouraged nor presumed. *Id.* Additionally, Patent Owner points to no expressions of disavowal either in the prosecution history or in the specification of the ’036 patent with regard to “a digital representation” in which the patent applicant disavows, with clarity, claim scope covering analysis of more than one digital representation.

For the foregoing reasons, we disagree with Patent Owner, and we determine that analyzing “a digital representation” as recited in claim 1 does not preclude involvement of an additional digital representation or digital representations in the analysis.

3. *Other Limitations*

In its Response, Patent Owner submits constructions for certain other limitations, namely (1) “printed media” as recited in claim 10; and (2) “a remote computer” as recited in claim 15. PO Resp. 18. Based upon our consideration of the complete record before us, we conclude that it is unnecessary to interpret expressly any of these limitations for purposes of rendering our final decision in this case. *See Nidec*, 868 F.3d at 1017.

D. Alleged Obviousness of Claims 1, 10, 12, 13, and 15 over the Combination of Ogasawara and Bolle

Petitioner contends claims 1, 10, 12, 13, and 15 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Ogasawara (Ex. 1005) and Bolle (Ex. 1006).⁵ Pet. 14–57; Pet. Reply 1–22. Patent

⁵ In our Institution Decision, we stated, “[a]lthough Petitioner has alleged that Ogasawara discloses every limitation of claim 1, Petitioner also has provided for contingencies in case Ogasawara does not disclose certain limitations of claim 1 and teachings from Bolle are needed to be combined with teachings from Ogasawara to render claim 1 obvious.” Dec. 19–20 (citing Pet. 41–47). We also found that “Petitioner explicitly identifies Ground 1 as based on obviousness over the combination of Ogasawara and Bolle,” and that “in identifying its only ground for unpatentability in this case, Petitioner identifies neither anticipation by Ogasawara nor obviousness based on Ogasawara alone as such grounds.” Dec. 20. Given that Petitioner’s subsequent arguments in this proceeding do not address anticipation by or obviousness solely over Ogasawara, and taking that in light of the Petition’s identification of its sole challenge to patentability as “[o]bvious[ness] over Ogasawara and Bolle,” we again find on the complete record before us that Petitioner’s “Ground 1” is directed only to obviousness over *the combination of Ogasawara and Bolle*. See Pet. 8; Reply 1 (“Ogasawara, however, *is not a standalone § 103 reference*; it is *combined* with Bolle in *the only ground* of the Petition. Thus, Patent Owner’s enablement argument fails because it does not address the stated grounds of invalidity, let alone the prior art as a whole, e.g., *Ogasawara and Bolle*.”

Owner opposes Petitioner’s contentions. PO Resp. 25–60; PO Sur-Reply 10–28. For the reasons expressed below, and based on the complete record before us, we determine Petitioner has not proven that an ordinarily skilled artisan (1) would have had a rational reason to combine the teachings of Ogasawara and Bolle to achieve the recited inventions of claims 1, 10, 12, 13, and 15; and (2) would have had a reasonable expectation of success in doing so. Thus, we determine that Petitioner has not demonstrated by a preponderance of the evidence that claims 1, 10, 12, 13, and 15 would have been obvious over the combination of Ogasawara and Bolle. We turn first to an overview of Ogasawara and Bolle.

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

Ogasawara relates generally to “an electronic shopping system which utilizes a program downloadable wireless video phone as a purpose-type dedicated terminal which enables a shopper to capture, recognize and decode captured images.” Ex. 1005, 1:16–21; *see id.* at code (57). In Ogasawara, an integral digital camera is attached to the wireless telephone to facilitate the selection of items to be purchased and is controlled to function as a bar code or product icon image capture device. *Id.* at code (57). Character or pattern recognition software translates the bar or icon code image into an appropriate item identifier. *Id.*

(emphases added)); Tr. 6:22–24 (Petitioner’s counsel: “The first thing is that the asserted grounds of unpatentability are based on the combination of Ogasawara, and Bolle as the panel knows.”); *see also* 35 U.S.C. § 312(a)(3). Regardless, for the same reasons given in our Institution Decision, we disagree that Ogasawara alone would have rendered any of the Challenged Claims unpatentable. Dec. 27–28, 34–35.

Figure 1 of Ogasawara is reproduced below.

FIG. 1

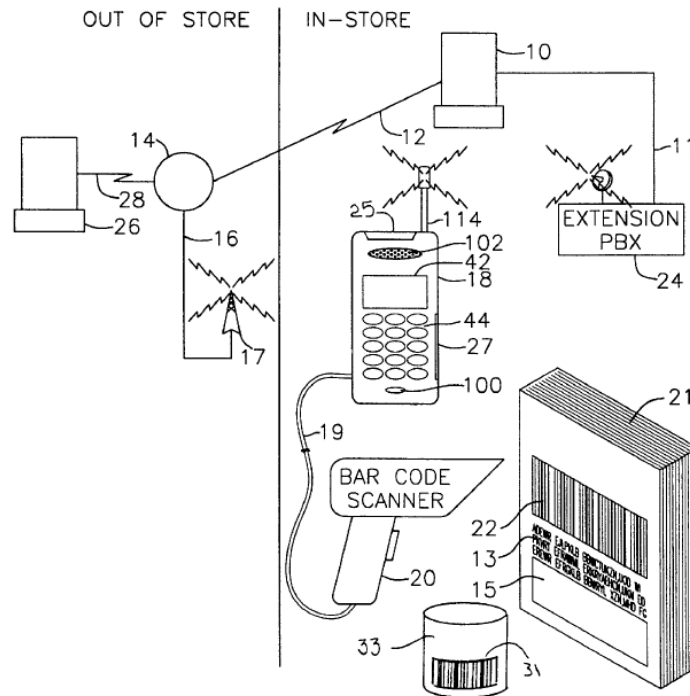


Figure 1 depicts a schematic overview of an electronic shopping system.

Ex. 1005, 4:9–10, Fig. 1.

Figure 1 of Ogasawara shows an electronic system comprising store server 10 in communication with a commercial telephone network 14.

Ex. 1005, 4:66–5:2. Commercial telephone network 14 facilitates a connection of store server 10 to wireless telephone 18. *Id.* at 5:10–11.

Optionally, external bar code scanner 20 communicates with the wireless telephone 18 via wire connection 19. *Id.* at 5:31–32. Alternatively, a built-in bar code scanner 25 and/or a built-in IC card reader/writer 27 are formed integrally with the wireless telephone 18. *Id.* at 5:36–38. In a store, a bar code on a purchased item 33 is scanned by bar code scanner 20 attached to a

wireless telephone 18. Catalog 21 of the items which can be purchased contains a bar code 22 for each such item, and preferably also contains descriptive text 13 and a picture 15 of each item. *Id.* at 5:40–43.

Figure 10 of Ogasawara is reproduced below.

FIG. 10

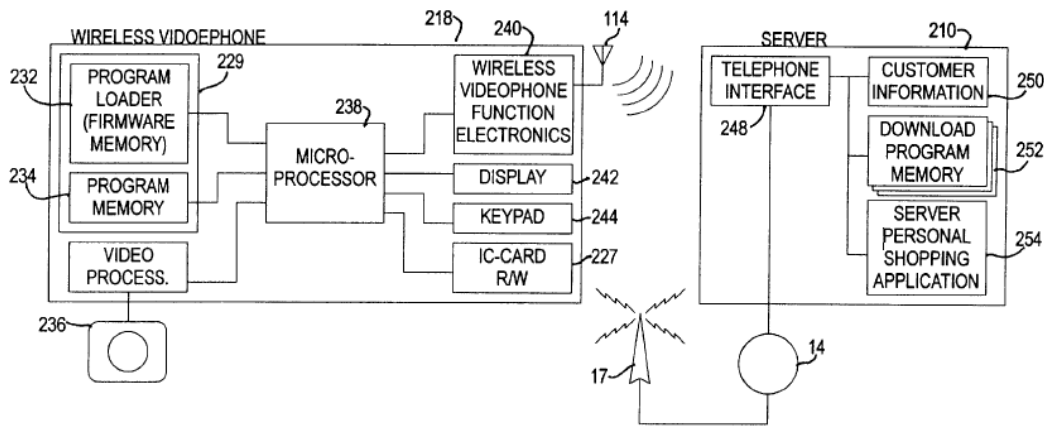


Figure 10 depicts a block diagram of an electronic shopping system having a wireless videophone.

Ex. 1005, 4:34–36, Fig. 10. Figure 10 illustrates wireless videophone 218 used in combination with store or remote server 210. *Id.* at 15:55–56.

Wireless videophone 218 includes miniature digital image capture device 236, such as a CCD camera system. *Id.* at 15:63–16:1.

Digital camera 236 includes processing circuitry that translates the visual image acquired by the camera's lens into digital signals suitable for processing by microprocessor 238 into a form that can be transmitted by functional electronic section 240. *Id.* at 16:7–12.

As described by Ogasawara, since digital camera 236 can be provided to the wireless videophone 218 in place of a bar code scanner, the tailored purchase transaction program may additionally include character recognition

and/or pattern recognition software, as well as bar code decode software. This would allow the wireless videophone to function in a manner similar to the wireless telephone and bar code scanner embodiment illustrated in Figure 1. Ex. 1005, 18:15–22.

Ogasawara also discloses that advanced pattern recognition software is able to enhance the performance of the wireless videophone by offering the capability to capture merchandise information from items that are not identified by either a bar code or an alpha-numeric label. Ex. 1005, 23:11–15. According to Ogasawara, advanced pattern recognition software allows a consumer to capture a videographic image of an apple, for example, and to have the apple be recognized as such by the pattern recognition software. *Id.* at 23:16–19. “This capability is useful for any merchandise item *having a distinct or identifiable shape or other visually identifiable characteristic*. Such pattern recognition is accomplished within the wireless videophone, by specialized downloaded software.” *Id.* at 23:19–23 (emphasis added).

We further discuss below the disclosure of Ogasawara in connection with the parties’ arguments.

2. Overview of Bolle (Ex. 1006)

Bolle relates generally to “recognizing (i.e., identifying, classifying, grading, and verifying) objects using computerized optical scanning devices,” and “a trainable system and method relating to recognizing bulk items using image processing.” Ex. 1006, 1:6–10; *see id.* at code (57). In Bolle, an image processing system takes digitized images of a scene. *Id.* at code (57). Using an algorithm, an object image is segmented⁶ from a

⁶ “Segmenting (also called figure/ground separation) is separating a scene image into separate object and background images. Segmenting refers to

background image. *Id.* The object image is then processed and compared to stored reference images. *Id.* The object is recognized when a match occurs. *Id.*

Figure 4 of Bolle is reproduced below.

FIG. 4

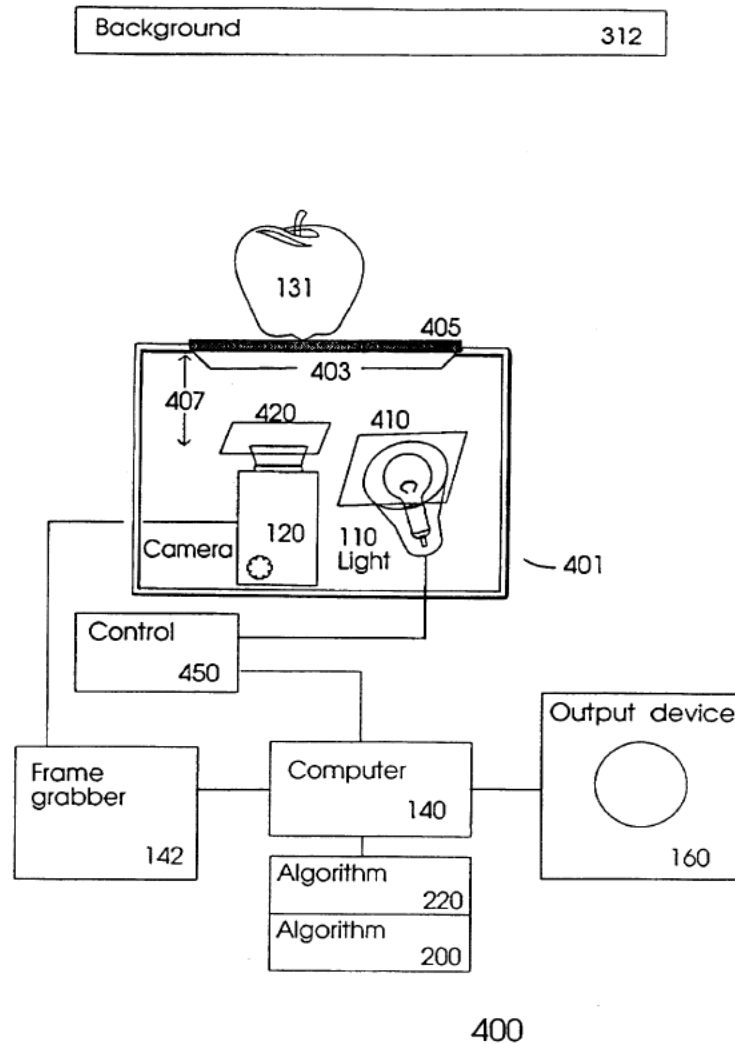


Figure 4 depicts a block diagram of an apparatus for segmenting images and recognizing an object in images.

identifying those image pixels that are contained in the image of the object versus those that belong to the image of the background.” Ex. 1006, 2:3–7.

Ex. 1006, 6:30–32, Fig. 4. Figure 4 shows a block diagram of system 400 for imaging scenes, segmenting object images 130 from their background image 311 of a physical background 312, and recognizing object(s) 131. *Id.* at 9:21–25. System 400 comprises opening 403 to allow object 131 to be imaged by camera 120 and illuminated by light 110. *Id.* at 9:39–43. The system further includes a segmenting algorithm for segmenting an image of object 131 from an image of the scene. *Id.* at 10:17–19. After the image is segmented, computer 140 performs a computation to determine features of the target object. *Id.* at 12:58–62. Further, computer 140, via algorithm 200, compares normalized characteristics of the target object 131 to one or more normalized referenced object characteristics. *Id.* at 13:61–63.

Bolle further describes comparison/matching of the target characterization to the reference characterizations that is performed according to one or more matching algorithms, such as a nearest neighbor classification. Ex. 1006, 15:50–67.

We further discuss below the disclosure of Bolle in connection with the parties’ arguments.

3. *Alleged Reasons to Combine Teachings of Ogasawara and Bolle*

a) *Independent Claim 1*

Petitioner contends the combined teachings of Ogasawara and Bolle render obvious the invention of independent claim 1. Pet. 27–57; Pet. Reply 1–22. This implicates the fundamental issue of whether the ordinarily skilled artisan would have had a *rational* reason to combine such teachings in the first place. See *KSR*, 550 U.S. at 418 (To support the legal conclusion of obviousness, “there must be some articulated reasoning with some

rational underpinning” for combining elements in the manner claimed.); *Regents of Univ. of Cal.*, 903 F.3d at 1291. The parties dispute, *inter alia*, whether Petitioner has proven that the skilled artisan would have had such a rational reason. Pet. 27–57; PO Resp. 25–60; Pet. Reply 1–22; PO Sur-Reply 10–28; Tr. 7:18–20 (Petitioner’s counsel: “I’d like to address patent owner’s three main reasons why there is no motivation, and tell you why they’re wrong.”). We find this issue dispositive in this case as to all Challenged Claims, as discussed below.

In considering the parties’ arguments on this issue, we are mindful that even if one of ordinary skill in the art were to understand that two references *could be* combined, this would not itself imply a motivation or reason to combine the references. *Personal Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987 993–94 (Fed. Cir. 2017); *see also Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) (“[O]bviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modifications of prior art to arrive at the claimed invention.”); *InTouch Techs., Inc. v. VGO Communications, Inc.*, 751 F.3d 1327, 1352 (Fed. Cir. 2014).

In this case, Petitioner argues, *inter alia*:

(1) Ogasawara teaches most limitations in claim 1 and discloses using “[a]dvanced pattern recognition software” to recognize targets in digital representations of scenes (e.g., images) under certain conditions, but lacks teachings concerning recognizing a target in an image where the “target’s shape or other visual characteristic may not be distinct or identifiable due to the distractions from the rest of the image,” which Petitioner submits is required by claim 1 (Pet. 28, 30 (“Ogasawara [] does not segment the target

from the background and thus cannot perceive the target's distinct or identifiable shape or other visually identifiable characteristic.”); Ex. 1005, 23:11–30; *see, e.g.*, Pet. 27–50; Pet. Reply 11–22; Tr. 7:1–7 (Petitioner's counsel: “Ogasawara advanced pattern recognition does not segment the object from the background, and again, that's where Bolle comes into play.”));

(2) Bolle fills that void by teaching “segmenting a target from its background in a digital representation of a scene and matching parameters derived from the segmented target to recognition parameters of known targets stored in a target database” (Pet. 27; *see, e.g., id.* at 7 (relying on “the use of Bolle's image segmentation and database matching techniques, in Ogasawara's system”), 27–50; Pet. Reply 11–22); and

(3) the skilled artisan would have combined these teachings from Ogasawara and Bolle “to achieve a system that could more accurately discern the shape or other visual characteristics of a target in an image to be able to identify that target” (Pet. 27; *see, e.g., id.* at 27–50; Pet. Reply 11–22).

Patent Owner responds, *inter alia*:

(1) the only image segmentation techniques disclosed in Bolle require the use of *two* different images where “the first and second images are in *spatial registration*⁷,” which requires “precise pixel-to-pixel correspondence

⁷ Bolle describes “spatial registration” as follows:

Suppose each pixel is numbered starting in the upper left corner of the image then proceeding across the first line then down to the second line in the manner of reading a book. Registration means that each numbered pixel in the first image corresponds to the same area of the scene (object(s) 131 and background 312)

between the two spatially-aligned images” (PO Resp. 42–43 (quoting Ex. 1006, 10:31–34 (emphasis added)), 45; *see, e.g.*, PO Resp. 36 (“Bolle’s system always requires taking **two** photographs of a target object, under very specific conditions.”), 35, 37–44; PO Sur-Reply 10–28);

(2) Ogasawara teaches a retail consumer using a *mobile* (e.g., hand-held) device to take a *single* image of an object for purposes of identifying the object via a bar code or similar marking on the object (*see, e.g.*, PO Resp. 30–34); and

(3) for “multiple reasons” (PO Resp. 45), the skilled artisan would *not* have had a rational reason to apply Bolle’s “two-image” segmentation techniques requiring precise spatial registration between the two images to Ogasawara’s “one-image” method performed by consumers holding mobile devices in their hands (PO Resp. 45–55; *see, e.g.*, PO Resp. 48 (“Bolle’s repeated emphasis on the necessity for taking two photographs from a stationary platform before any object could be recognized is a fundamentally different approach from Ogasawara’s, which only uses a single photograph of a target object, taken from a non-stationary wireless videophone.”)).

In our Institution Decision, we preliminarily found “Petitioner’s cited evidence provides sufficient rational reasons for purposes of institution to combine Ogasawara and Bolle.” Dec. 39; *see id.* at 33, 37–38. However, on further review of the Petition and further consideration of the parties’

as the identically numbered pixel in the second image. Proper registration can be ensured by either acquiring the first and second image in quick succession, or by imaging a stationary object 131 against a stationary background 312.

Ex. 1006, 10:34–44.

briefing on this issue and the relevant case law, and based on the complete record before us, we now conclude otherwise. *See Fanduel, Inc. v. Interactive Games LLC*, 966 F.3d 1334, 1340 (Fed. Cir. 2020) (“There is nothing inherently inconsistent about the Board instituting IPR on obviousness grounds and then ultimately finding that the petitioner did not provide preponderant evidence that the challenged claim was obvious.”); *In re Magnum Oil Tools*, 829 F.3d at 1376 (“[T]he decision to institute and the final written decision are ‘two very different analyses,’ and each applies a ‘qualitatively different standard.’” (quoting *TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1068 (Fed. Cir. 2016))).

In particular, we determine that Petitioner has not proven, by a preponderance of the evidence, that the ordinarily skilled artisan would have had a *rational* reason to combine the relevant teachings of Ogasawara and Bolle to render obvious the invention of independent claim 1. This issue is substantially disputed between the parties (*see* Pet. 27–57; PO Resp. 25–60; Pet. Reply 1–22; PO Sur-Reply 10–28), with Petitioner also seeking to exclude nearly all of the testimony of Patent Owner’s expert, Dr. Bajaj, on this issue (Mot. Excl.), and with Patent Owner arguing that Petitioner’s Reply “improperly raises new theories for the first time” on this issue (PO Sur-Reply 4–10). Nonetheless, the burden of proving a rational reason (or motivation) to combine such teachings *is on Petitioner* and never shifts to Patent Owner. *Dynamic Drinkware*, 800 F.3d at 1378; *Eli Lilly & Co. v. Teva Pharms. Int’l GmbH*, 8 F.4th 1331, 1348–49 (Fed. Cir. 2021) (“[I]t was, at all times, [petitioner’s] burden to show that the claims would have been obvious.”). To this end, interspersed across its Petition and Reply, Petitioner submits what we have categorized as four arguments in

support of its contention that the skilled artisan allegedly would have combined the relevant teachings of Ogasawara and Bolle to achieve the invention of claim 1. We find these four arguments unpersuasive, and that Petitioner's alleged evidence in support thereof fails to meet its evidentiary burden, as discussed below.

(1) *Bolle's Teachings Based on its Figure 3a Embodiment*

In most instances, *the Petition* relies only generally on Bolle's use of "image segmentation technology" in arguing that the skilled artisan would have been motivated to combine such "image segmentation technology" with Ogasawara's teachings to achieve the invention of claim 1.⁸ Although not presented especially clearly in the Petition,⁹ we understand Petitioner to argue that the skilled artisan would have turned to Bolle's specific "image segmentation" teaching of comparing two spatially registered images of a scene, one with and the other without an object present, as depicted in Figure 3a, reproduced below. See Pet. 33 ("Furthermore, 'carefully controlled lighting conditions' *are not required* for Bolle. Indeed, Bolle

⁸ See, e.g., Pet. 29 ("Bolle uses image segmentation technology in conjunction with object recognition techniques and a target database that stores known targets of different types and associated recognition parameters to match parameters derived from the segmented target to those of known targets stored in the target database."), 7 (referencing "Bolle's image segmentation and database matching techniques"), 46 ("Bolle teaches 'an algorithm' whereby 'the object(s) image is novelly segmented from a background image of the scene by a comparison of the two digitized images taken.'"); see generally Pet. 14–57.

⁹ See 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to each claim").

provides for segmentation of a target in an image *by comparing images of a scene with and without the target present.*” (emphases added) (citing Ex. 1006, 8:45–9:4 (discussing Fig. 3a), Fig. 3a), 46 (“[T]he object(s) image is novelly segmented from a background image of the scene by a comparison of the two digitized images taken.” (quoting Ex. 1006, 6:1–6)); *see also* PO Sur-Reply 5 (“The grounds all relied on the same embodiment of Bolle—its Figure 3a embodiment.”), 7 (“The Petition cited Bolle’s general description of background segmentation but only relied on Bolle’s Figure 3a embodiment.”).

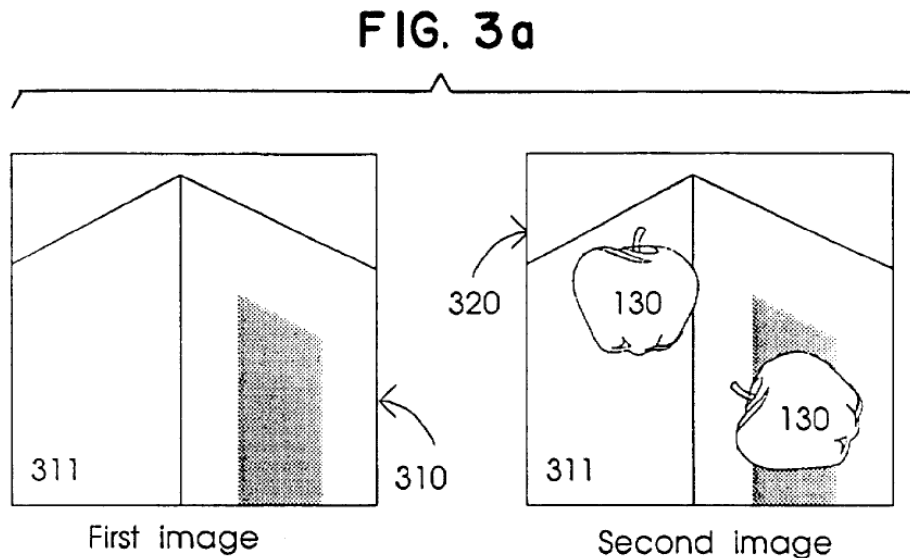


Figure 3a depicts segmenting a scene into an object image and a background image.

Ex. 1006, 6:27–28, Fig. 3a. Bolle’s Figure 3a shows two scenes, and along with its related description, teaches:

The first imaged scene 310, shows an image of a background 311 without any other objects present in the field of view of camera 120. The second imaged scene 320 includes both an image of the scene background 311 and an image 130 of one or more objects 131. Here the pixels of the imaged object 130

replace pixels in the background image 311 in those areas of the scene image 320 where object 131 is present. Hence, it is an image of background 311 with instances of objects 131 present in the scene.

A comparison of the scenes 310 and 320, *preferably on a pixel by pixel basis*, allows the object image 130 to be segmented (separated out) from the background image 311 of the scene. If for *a given pixel* in the 320 image, the brightness is different from (e.g., more than) the image brightness of *said pixel* in 310, this pixel belongs to object image 130. If for *a given pixel* in the image 320, the brightness is equal to *same pixel* in 310, this pixel belongs to background image 311.

Ex. 1006, 8:53–9:4 (emphases added). In other words, Bolle teaches segmenting an object image from a background image using a first image of a scene without an object present and a second image of the scene with the object present, *but doing so without moving the imaging device even about a single pixel value¹⁰ of distance while capturing those two separate images.*

Despite calling out image segmentation teachings relating to Bolle’s Figure 3a embodiment, Petitioner offers no specific reason, let alone a rational one stated with particularity, for *why* the skilled artisan would have

¹⁰ Although Petitioner offers no evidence as to the size of a “pixel,” based on Ogasawara’s description of a “LCD display having a resolution of, for example, 320x240 pels [i.e., pixels],” we understand a pixel at least in the context of Ogasawara and Bolle to have a size of the order of magnitude of about one millimeter (or less). See Ex. 1005, 16:40–42; Tr. 45:22–46:14 (“Counsel [for Patent Owner], do you have an understanding of what the size of a pixel is? . . . [T]here is very little evidence on measurements, petitioner has not put in any evidence on this point. Ogasawara does explain, this is at [column 16], lines 40 through 45 . . . I don’t recall if Ogasawara explains how big the screen is, but we’re talking year 2000, we’re not talking giant screens. He says that the screen is 320 by 240 pixels, that by my math is 76800 pixels on a tiny screen. That’s the level of identity that Bolle is requiring.”).

turned specifically to Bolle’s “image segmentation” teaching of comparing two spatially registered images of a scene, one with and the other without an object present, as depicted in Figure 3a. Instead, Petitioner takes Bolle’s teachings concerning Figure 3a *out of context*, and argues only generally that the skilled artisan allegedly would have been motivated to use Bolle’s “image segmentation” (generically) with Ogasawara to achieve the invention of claim 1. *See, e.g.*, Pet. 27 (Petitioner arguing generally that combining Ogasawara and Bolle would have “achieve[d] a system that could more accurately discern the shape or other visual characteristics of a target in an image to be able to identify that target.” (citing Ex. 1003 ¶ 92)); Pet. 30 (Petitioner arguing “Bolle would predictably enhance the performance of the Ogasawara system,” and the teachings of the references themselves “provide [the skilled artisan] with a strong motivation to combine Ogasawara and Bolle.” (citing Ex. 1003 ¶¶ 97–98)); Pet. 24 (Petitioner arguing “both references are in the same field and address the same issue in the same context—using image processing systems to identify products, such as produce, for purchase during shopping.” (citing Ex. 1003 ¶ 98)); *see generally* Pet. 27–34.

Patent Owner argues, *inter alia*, “a retail customer would not be able to take the necessary photographs to segment a target from the background using Bolle’s [Figure 3a] techniques,” because “Bolle requires precise pixel-to-pixel correspondence between the two spatially-aligned images in a non-mobile environment, which would be hard—if not impossible—for a retail customer to do,” particularly where customers must physically or manually insert or remove objects from scenes between the time of taking the two images using mobile devices held in their hands. PO Resp. 45 (citing

Ex. 1006, 10:31–35, 10:53–55; Ex. 2006 ¶¶ 22–24); *see id.* at 35–55.

After Patent Owner highlighted this issue (PO Resp. 1–3, 30–55), Petitioner responded by characterizing its arguments and evidence, directed on their face to reasons or motivations to combine the teachings of Ogasawara with Bolle’s teaching of image segmentation related to Figure 3a, as *also* being directed to other of Bolle’s image segmentation teachings (discussed below). Pet. Reply 10–22; *see* PO Sur-Reply 5 (“Petitioner now recasts its Petition argument, focusing on three alternative Bolle embodiments that are fundamentally different than the Figure 3a embodiment.”); 7 (“The Petition cited Bolle’s general description of background segmentation but only relied on Bolle’s Figure 3a embodiment. Having been shown that Ogasawara cannot be combined with this embodiment, Petitioner newly relies on Bolle’s Figure 3b embodiment **and** capturing images in quick succession.”).

We find Petitioner’s arguments and evidence here ignore the critical context of Bolle requiring that the two images being used to perform image segmentation be in spatial, pixel-to-pixel registration, despite an object being moved into or out of a scene between the taking of those two images. *See Bausch & Lomb, Inc. v. Barnes-Hind/Hyrocurve, Inc.*, 796 F.2d 443, 448 (Fed. Cir. 1986) (“It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one skilled in the art.”). Petitioner alleges Patent Owner provides no support “for the claim that a user cannot hold Ogasawara’s videophone sufficiently stationary while capturing multiple images.” Ex. 1050 ¶ 49. To the contrary, Patent Owner’s expert, Dr. Bajaj, testifies:

Performing this pixel-accurate spatial registration from two independently-acquired images taken by a shopping customer on their phone is non-trivial and is prone to be erroneous. All spatial registration errors between the two images are carried over and causatively yield much greater error using the pixel-wise segmentation algorithm 220 of Bolle.

The resulting segmentation errors in the separation of the pixels belonging to the object from the pixels belonging to background image causes greater and cascadic error in the object recognition phase of Bolle's method of extracting and normalizing separated object histogram characteristics and comparing to one or more stored normalized reference characterizations.

Ex. 2007 ¶¶ 23–24; see PO Sur-Reply 11. Patent Owner also submits that “[t]he difficulty of an average customer to take two pixel-perfect images using a mobile phone is also *self-apparent*.” PO Sur-Reply 11 (emphasis added).

Regardless, it is Petitioner's burden to evidence sufficiently that the ordinarily skilled artisan would have understood that such a user could have held Ogasawara's videophone sufficiently stationary while capturing multiple images as required by Bolle's Figure 3a embodiment—Petitioner has not done so. More importantly, it is Petitioner's burden here to evidence sufficiently and with particularity *why* the ordinarily skilled artisan, *but for hindsight* and in the time frame of the year 2000 (about *seven years before* introduction of the first “iPhone” by Apple Inc.¹¹), would have combined (a) Ogasawara's system where, for example, shoppers use mobile devices (e.g., handheld mobile phones) to capture single images of objects and to

¹¹ See Apple Reinvents the Phone With iPhone, <https://www.apple.com/newsroom/2007/01/09Apple-Reinvents-the-Phone-with-iPhone/> (accessed Dec. 21, 2022).

have those objects recognized as such by pattern recognition software, with (b) Bolle's image segmentation technique of Figure 3a, where such shoppers would have had to hold their mobile phones with near perfect stability and positioning in space all while taking one image of a scene without an object of interest therein, then physically placing the object within the scene (presumably not using the hand holding the phone), and then taking a second image of the scene with the object present. For the reasons discussed above, we agree with Patent Owner that Petitioner fails to meet its burden here. Indeed, we find it incredible (i.e., not credible) that the ordinarily skilled artisan at the relevant time would have considered it desirable (or feasible) for a consumer/shopper to have to hold a mobile device in space with such pixel-level precision (e.g., without causing the scene as seen by the camera to move even about one millimeter or less in any direction or orientation). We find this proposed combination of teachings to simply not make sense based on the record before us and the relevant time frame.

(2) Bolle's Teachings Based on its Figure 3b Embodiment and "Quick Succession"

In its Reply, Petitioner argues the skilled artisan would have been motivated to combine Bolle's alternative "image segmentation" teaching of comparing two spatially registered images of a scene, one taken with a flash and the other without a flash, as depicted in Bolle's Figure 3b, with Ogasawara's teachings to achieve the invention of claim 1. *See, e.g.,* Pet. Reply 2–14, 20–21. Petitioner argues the skilled artisan "would have been motivated to combine Ogasawara and Bolle to achieve a system that could more accurately discern the shape or other visual characteristics of a target

in an image to be able to identify that target.” Pet. 27 (citing Ex. 1003 ¶ 92); *see id.* at 27–34.

Figure 3b of Bolle is reproduced below.

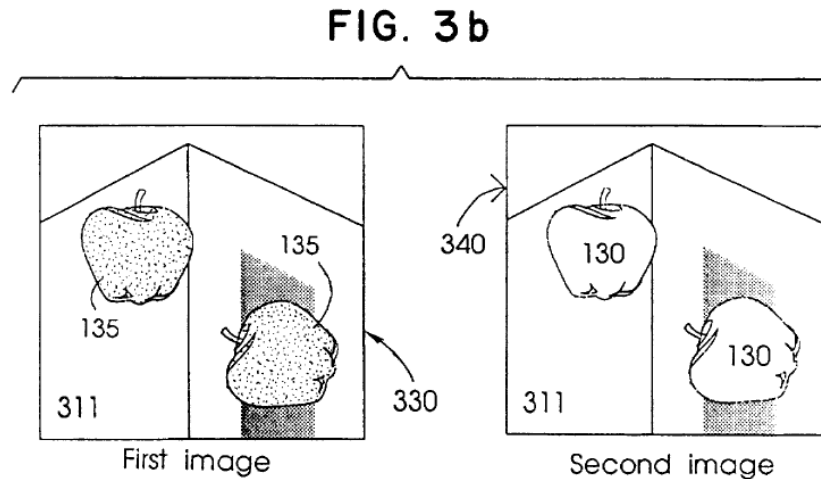


Figure 3b depicts segmenting a scene into an object image and a background image.

Ex. 1006, 6:27–28, Fig. 3b.

Bolle’s Figure 3b shows two images of a scene with a background and one or more objects, and along with its related description, teaches:

Image 330 in FIG. 3b is an image of a scene (including objects 131 and a background 311) with light source 110 off. That is, the scene image 330 consist of an image of background 311 illuminated by ambient light. Also in the scene image 330 are the object images 135 obscuring the background. Because the light source 110 is off, object images 135 appear dark in scene image 330 because they are not illuminated by the light source 110.

Image 340 in FIG. 3b is an image of the scene with light source 110 on. In this case, the light source 110 illuminates objects 132 in field of view of camera with an amount of light greater than ambient light. This results in the object images 130 being brighter (than in 330) in scene image 340.

Ex. 1006, 9:5–20. Bolle further teaches in connection with Figure 3*b* and Figure 5 (not shown here) that the object, background, and image input device “should be at the *same position* in both step 510 and 520 [i.e., the steps of acquiring the first/dark image and second/light image] to assure that the first and second images are in *spatial registration*.” *Id.* at 10:31–34 (emphases added). Bolle also teaches in connection with Figure 3*b* and Figure 5 that “[p]roper registration can be ensured by either acquiring the first and second image in *quick succession*, or by imaging a *stationary object* 131 against a *stationary background* 312.” *Id.* at 10:41–43 (emphases added).

Petitioner argues “Bolle[] express[ly] teach[es] that taking the first and second digital representations in *quick succession* ensures that the camera, object, and background are in the same relative position in both digital representations.” Pet. Reply 12 (citing Ex. 1006, 10:31–44) (emphasis added). Petitioner argues, “[b]y capturing digital representations in *quick succession*, any relative movement is insignificant, and thus, the images will be sufficiently aligned for segmenting the target from the background.” *Id.* (emphasis added). Petitioner also argues “flash functionality in CCD cameras integrated in mobile phones was well known at the time of the invention,” and that the skilled artisan “would therefore understand that the camera in Ogasawara’s videophone would include a synchronized camera flash to illuminate the target for image segmentation.” *Id.* at 21. Petitioner argues “Bolle explains that a camera flash or ‘strobe’ ‘may be synchronized with the camera’ capturing the two images,” and that “[w]hen this teaching is combined with the teaching of capturing images in ‘quick succession’ and incorporated into Ogasawara’s videophone, [the

skilled artisan] would have been motivated to have the resultant combination take two pictures in ‘quick succession.’” *Id.* at 13–14 (citing Ex. 1006, 10:8–16, 7:18–65, 9:59–60; Ex. 1050 ¶ 54); *see id.* at 20–21 (discussing illumination).

Patent Owner complains that Petitioner’s reliance on teachings of Bolle’s Figure 3*b* embodiment and related disclosure to support an alleged motivation to combine Ogasawara and Bolle constitute a new obviousness theory presented for the first time on reply. *See* PO Sur-Reply 5–6 (“Petitioner modifies its grounds by combining Ogasawara with ‘Bolle’s Figure 3*b* [segmentation] embodiment,’ where the images are captured in ‘quick succession’ and synced to a camera’s flash, such that the first image is taken without a flash, and the second image is taken with a flash.”), 4 (“Petitioner presents . . . entirely new obviousness theories based on previously-uncited Bolle embodiments.”), 4–8. As the Federal Circuit stresses:

It is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify with particularity the evidence that supports the grounds for the challenge to each claim. . . . [T]he expedited nature of IPRs bring with it an obligation for petitioners to make their case in their petition to institute.”

Wasica Finance GmbH v. Continental Automotive Systems, Inc., 853 F.3d 1272, 1286–87 (Fed. Cir. 2017) (quoting *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016), which quotes, in part, 35 U.S.C. § 312(a)(3) (The Petition must identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim.”)). But the Federal Circuit also has cautioned that any ambiguity as to whether a reply constitutes a new argument is eliminated

when the reply is a legitimate reply to arguments introduced in a patent owner's response or the Board's institution determination. *Apple Inc. v. Andrea Elecs. Corp.*, 949 F.3d 697, 706–07 (Fed. Cir. 2020) (citing *Anacor Pharms., Inc. v. Iancu*, 889 F.3d 1372, 1380–81 (Fed. Cir. 2018)); see *Everstar Merch. Co. v. Willis Elec. Co.*, No. 2021-1882, 2022 WL 1089909, at *4 (Fed. Cir. Apr. 12, 2022).

During oral hearing, Petitioner's counsel could not identify specifically *in the Petition* any actual discussion of Figure 3*b*, let alone any discussion of taking images in “quick succession” with changing illumination (with flash/without flash), but for identifying a few *citations* in the Petition, where the cited material also included (or perhaps happened to include) reference to Figure 3*b*. See, e.g., Tr. 12:3–17:1. We likewise find no such arguments presented with particularity concerning Figure 3*b* and “quick succession” in the Petition. The Petition itself explicitly notes that “Bolle provides for segmentation of a target in an image *by comparing images of a scene with and without the target present*” (Pet. 33 (emphasis added)), which implicates only Bolle's Figure 3*a* embodiment, and effectively dismisses Bolle's Figure 3*b* embodiment involving specific, controlled lighting requirements by stating, “‘carefully controlled lighting conditions’ *are not required* for Bolle” (Pet. 33 (emphasis added)). We agree with Patent Owner that Petitioner's arguments in its Reply concerning Bolle's Figure 3*b* embodiment and “quick succession” constitute arguments offered for the first time on reply. However, because Patent Owner discussed Bolle's Figure 3*b* embodiment in its Response (PO Resp. 40–44), and because our decision does not turn on whether

Petitioner's arguments here are new and improper, we need not and do not decide this procedural issue and instead turn to the merits.

Patent Owner argues Bolle's Figure 3*b* embodiment, like the Figure 3*a* embodiment, requires that "the two images must be pixel-accurate, spatially aligned or registered views—*i.e.*, the camera cannot be moved significantly between the two photographs," and "[t]hus, a stationary camera is **required** to capture the necessary segmentation images." PO Resp. 42–43. Patent Owner argues "Ogasawara never describes a cell phone as containing a flash or any other light source, which would have prevented using Bolle's second, illumination-based segmentation approach," and that "[t]his would have [led] a skilled artisan away from combining Ogasawara and Bolle to yield the challenged claims." PO Resp. 47; *see id.* at 57 ("There is no description in Ogasawara of even taking more than one photograph per target item, much less any disclosure of how the mobile phone could be used to take the required two photographs under specific illumination conditions."). According to Patent Owner:

Petitioner argues on Reply for the first time that "flash functionality in CCD cameras integrated in mobile phones was well-known." Reply 21 (citing EX1050 ¶80). It raises this argument because Bolle's Figure 3*b* (Petitioner's new combination) requires a flash, and, as PO had pointed out, neither Ogasawara or Bolle disclose an integrated flash. POR 48.

Petitioner relies on an entirely new reference, EX1062, U.S. Patent No. 6,122,526 ("Parulski"). Reply 21; *see also* EX1050 ¶81. The Petition did not disclose any obviousness theory involving Ogasawara's mobile videophone having an integrated flash. While the Petition asserted that "Bolle teaches that a . . . camera flash will suffice if a lighting source is preferred" (Pet. 33 (citing EX1006 7:3–17 (Fig. 1), 9:59–60), Bolle's only disclosure of a "camera flash" is not integrated into a mobile device but is instead a discrete "light source 110" that is preferably specific

types of external flash tubes. EX1006 7:14–17; Fig. 1. The Petition did not disclose the Reply’s new theory of integrating a flash into Ogasawara’s videophone, and certainly did not disclose Parulski. Reply 20-21. Petitioner’s arguments should therefore be given no weight.

PO Sur-Reply 8–9.

In response to Petitioner’s arguments about capturing first and second images in “quick succession,” Patent Owner argues that “Bolle explains that pictures may be taken in ‘quick succession’ when the **object** or **background** are not stationary, and otherwise expressly states that the camera ‘should be at the same position.’” PO Sur-Reply 16 (citing Ex. 1006, 10:31–44 (discussed above); Ex. 2008, 44:24–45:16 (Petitioner’s expert, Dr. Rodriguez, agreeing that “[t]he camera seems to be stationary.”); Ex. 2010, 55:18–56:5 (Dr. Rodriguez testifying that Bolle’s “camera is in a fixed position,” such as “putting a camera on a tripod.”). Patent Owner argues “Bolle’s teaching of capturing images in ‘quick succession’ is a solution for a **stationary** or **fixed-position** camera,” and “Ogasawara’s mobile videophone is incompatible with this system.” PO Sur-Reply 16–17. Patent Owner argues “Bolle expressly discloses in both its Figure 3a and 3b embodiments use of an enclosure where the desired object is placed on ‘a support 405’ to ‘ensure[] the object is of fixed and repeatable distance 407 from camera 120,’” and that “[t]his is because the segmentation process uses a precise pixel-by-pixel comparison of two images.” PO Sur-Reply 17.

We agree with Patent Owner that Bolle teaches using a *stationary* imaging device (camera) to obtain two images for purposes of segmentation via Bolle’s Figure 3a and 3b embodiments, and that Ogasawara teaches using a *mobile* device to obtain a single image for purposes of pattern recognition. Bolle itself explicitly states that the object, background, and

image input device “should be at the *same position*” when acquiring the first/dark image and second/light image, and that the two images must be *spatially registered* (explained above). Ex. 1006, 10:31–44; *see id.* at 9:48–51 (“By placing the object 131 on the surface 405, the distance 407 between camera 120 and object 131 remains fixed thus providing the means for repeatable imaging.”).

We credit Dr. Bajaj’s (Patent Owner’s expert) testimony that Bolle requires a stationary camera and spatially registered images for purposes of segmentation via Bolle’s Figure 3a and 3b embodiments, which we find to be well-aligned with Bolle’s disclosure and the complete record before us. *See, e.g.*, Ex. 2007 ¶ 33. We find Dr. Bajaj’s testimony on this issue much more credible than Dr. Rodriguez’s (Petitioner’s expert) testimony to the contrary, which we find to be misaligned at best with Bolle’s explicit disclosures discussed above. *See, e.g.*, Ex. 1050 ¶ 51 (Dr. Rodriguez testifying that Bolle’s Figure 4 shows a stationary camera, but Bolle allegedly is not limited to using a stationary camera; and that Bolle’s segmentation techniques do not require “exact alignment,” merely “approximate[]” alignment of images, without explaining how or why the skilled artisan would have interpreted Bolle in that way); Ex. 2008, 97:22–99:6 (testifying on re-direct to the same); *see also Skky, Inc. v. MindGeek, S.A.R.L.*, 859 F.3d 1014, 1022 (Fed. Cir. 2017) (the Board is “not required to credit [a party’s] expert evidence simply because [the party] offered it”); *TQ Delta, LLC v. CISCO Sys., Inc.*, 942 F.3d 1352, 1359 (Fed. Cir. 2019) (“This court’s opinions have repeatedly recognized that conclusory expert testimony is inadequate to support an obviousness determination on

substantial evidence review.”); *MobileMedia Ideas LLC v. Apple Inc.*, 780 F.3d 1159, 1172 (Fed. Cir. 2015).

We find Petitioner’s arguments and evidence here ignore the critical context of Bolle requiring that the two images being used to perform image segmentation be in spatial, pixel-to-pixel registration, despite needing to take the two images under separate and different lighting conditions (e.g., with flash and without flash). Again, it is Petitioner’s burden to evidence sufficiently that the ordinarily skilled artisan would have understood that a user could have held Ogasawara’s videophone sufficiently stationary while capturing multiple images as required by Bolle’s Figure 3*b* embodiment—Petitioner has not done so. And again, it is Petitioner’s burden here to evidence sufficiently and with particularity *why* the ordinarily skilled artisan, *but for hindsight* and in the time frame of the year 2000, would have combined (a) Ogasawara’s system where, for example, shoppers use *mobile* devices (e.g., handheld mobile phones) to capture single images of objects and to have those objects recognized as such by pattern recognition software, with (b) Bolle’s *stationary* image segmentation technique of Figure 3*b*, where such shoppers would have had to hold their mobile phones with near perfect stability and positioning in space all while taking one image of a scene with a flash and then taking another image of that same scene without a flash. For the reasons discussed above, we agree with Patent Owner that Petitioner fails to meet its burden here. See PO Sur-Reply 12–16.

Indeed, we find no credible explanation in the record before us for *why* the ordinarily skilled artisan would have considered it desirable (or feasible) for a consumer/shopper to have to hold a mobile device in space

with such pixel-level precision (e.g., without causing the scene as seen by the camera to move even about one millimeter or less in any direction or orientation), or otherwise would have considered it desirable to combine Bolle’s stationary, two-image segmentation method of Figure 3*b* with Ogasawara’s mobile, one-image object recognition system. We find this proposed combination of teachings to simply not make sense based on the record before us and the relevant time frame, even assuming that Bolle’s segmentation methods yield better results in object feature recognition, as Petitioner asserts (Pet. 27–34).¹²

*(3) Bolle’s Teachings Based on Figure 14,
“Histogramming,” and Claim 32*

In its Reply, Petitioner argues the skilled artisan would have been motivated to combine Bolle’s “image segmentation” teaching of “histogramming,” as discussed in connection with Bolle’s Figure 14, with Ogasawara’s teachings to achieve the invention of claim 1. Pet. Reply 9–10.

¹² To the extent Petitioner intends its “quick succession” arguments also to apply to Bolle’s Figure 3*a* embodiment (*see supra* Section III.D.3.a.1), we likewise are unpersuaded. We agree with Patent Owner that “Ppetitioner provides no evidence that pixel-perfect images with and without the object could be captured in ‘quick succession’ using a mobile phone,” and that “Bolle’s teaching of ‘quick succession’ is only disclosed in the context of the Figure 3*b* embodiment.” PO Sur-Reply 11–12 (citing Ex. 1006, 10:20–43; Ex. 2010, 67:9–20, 69:19–23).

Figure 14 of Bolle is reproduced below.

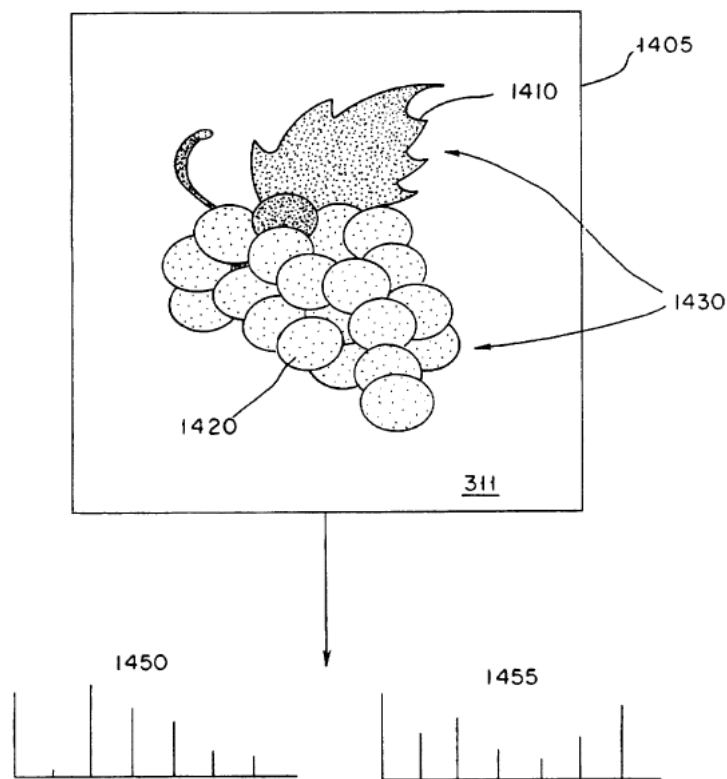


FIG. 14

Figure 14 depicts *an already segmented object* having two distinct regions that can be further segmented relative to each other.

Ex. 1006, 6:54–57, Fig. 14.

Petitioner argues Bolle “teaches segmenting a target in a digital representation *without comparing corresponding pixels of the target in two digital representations.*” Pet. Reply 9–10 (emphasis added). Specifically, Petitioner asserts:

Figure 14 [of Bolle] . . . discloses segmenting a “first object region” (e.g., leaves 1410) from a “second object region” (e.g., grapes 1420). . . . Ex. 1006, 19:16–27 (“The object image 130 [sic: 1430] is segmented along its first object region 1410 and its second 1420 object region . . . by using a segmentation

algorithm. A preferred algorithm is the use of an area normalized Hue histogram for detecting if there are two or more distinct peaks.”). *This type of segmentation algorithm would separate a scene image into separate target and background images just as it separates target regions.* Ex. 1050, ¶¶ 38–45.

Id. (emphasis added). In that connection, Petitioner contends that Bolle’s claim 32 recites “segmenting [a] target object image from the background image of the scene” without comparing two digital representations. *Id.* at 10. According to Petitioner, claim 32 of Bolle confirms that “[Bolle’s] segmentation embodiments are not limited to comparing two digital representations.” *Id.*

Petitioner’s reliance on Bolle’s claim 32 is misplaced. Even if the scope of claim 32 is broad and covers segmentation of a target from the background by analyzing only one digital representation, this is not a disclosure of any algorithm to segment a target from the background by analyzing only one digital representation. Indeed, we agree with Patent Owner’s assessment of Petitioner’s “claim 32” argument:

[Bolle’s] specification does not disclose any background segmentation algorithms that use only a single image. . . . [T]he Figure 14 segmentation algorithm [discussed above and further below] is not a background segmentation algorithm. The background segmentation algorithms disclosed in Bolle both use two images. There is therefore no single-image background segmentation teaching in Bolle to combine with Ogasawara.

PO Sur-Reply 21.

As noted above, a petition must identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim.”

35 U.S.C. § 312(a)(3). With regard to Bolle’s Figure 14 embodiment, Petitioner did not, in the Petition, identify or refer to Figure 14 as an algorithm to segment an object from the background in a scene. *See* PO Sur-

Reply 6 (“Petitioner modifies its grounds [as originally set forth in the Petition] by combining Ogasawara with Bolle’s segmentation algorithm depicted in Figure 14 used for segmenting an object into two sub-objects **after** background segmentation.”), 20 (“Petitioner also raises new arguments that Ogasawara could be combined with segmentation algorithms that only use one image.”). Petitioner also identifies no disclosure in Bolle which describes the algorithm associated with Figure 14 as segmenting a target from the background in a digital representation. *See id.* at 20 (“Petitioner argues that ‘[t]his algorithm would separate a scene image into separate object and background images just as it separates object regions,’ but provides no explanation for why this is true.”). To the contrary, in arguing in the Petition that Bolle teaches certain limitations in claim 1, Petitioner relies on Bolle’s two-image segmentation process. *See* Pet. 46 (“Bolle teaches ‘an algorithm’ whereby ‘the object(s) image is novelly segmented from a background image of the scene *by a comparison of the two digitized images taken.*’” (emphasis added)).

It is belated for Petitioner to raise this new contention, for the first time in its Reply, that Bolle discloses a Figure 14 embodiment which segments an object from the background in a scene using a single image. The argument is not entitled to consideration. If Petitioner wanted to make that argument, Petitioner should have presented the argument in the Petition to provide Patent Owner reasonable notice of the argument. *See* 37 C.F.R. §42.104(b)(4) (“The petition must specify where each element of the claim is found in the prior art patents or printed publications relied upon.”); 37 C.F.R. § 42.23(b) (“A reply may only respond to arguments raised in the corresponding opposition, patent owner preliminary response, or patent

owner response.”); *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1330–31 (Fed. Cir. 2019); *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369–70 (Fed. Cir. 2016).

Regardless, even if we were to consider the belated argument, we agree with Patent Owner that Bolle’s Figure 14 embodiment does not teach segmenting a target from the background in a digital representation, but only further segmenting a target already previously segmented from the background in a digital representation into two sub-portions. See PO Sur-Reply 20–21 (Bolle’s Figure 14 embodiment does not reflect “a background segmentation algorithm. Instead, it is an algorithm for segmenting an object *after* background segmentation.”). Bolle clearly discloses “segmented object image 130 has two distinct regions, i.e., the leaves 1410 and the grapes 1420.” Ex. 1006, 19:18–20. Bolle also discloses “object image 130 is segmented 220 from the background 311.” *Id.* at 17:1–2. Petitioner’s expert, Dr. Rodriguez, acknowledges that object image 130 is already segmented from the background. Ex. 1050 ¶ 38 (“FIG. 14 shows an image 1405 where segmented object image 130 has two distinct regions, i.e., the leaves 1410 and the grapes 1420.”); *id.* ¶ 42 (“The grapes and the leaves are part of a ‘segmented object image 130’ that was previously (prior to Figure 14) segmented from the original background.”).

We recognize that Dr. Rodriguez also testifies that “[t]his segmentation algorithm [separating the leaves and the grapes] would separate a scene image into separate target and background images just as it separates target regions.” Ex. 1050 ¶ 39. In its Reply, Petitioner asserts the same. Pet. Reply 9 (citing Ex. 1050 ¶¶ 38–45). But we agree with Patent Owner that Petitioner “provides no explanation for why this is true.” PO

Sur-Reply 20. Further, to the extent Petitioner is asserting that it would have been obvious to the ordinarily skilled artisan to adapt Bolle's algorithm of Figure 14 for use in segmenting a target from the background image in a digital representation, that is a new argument first presented in the Reply and is not entitled to consideration.

In sum, we find no credible explanation in the record before us for why the ordinarily skilled artisan would have considered it desirable (or feasible) to combine Bolle's Figure 14 embodiment with Ogasawara's teachings to achieve the invention recited in claim 1. We find this proposed combination of teachings to simply not make sense based on the record before us and the relevant time frame.

(4) *Bolle's Teachings of "Segmentation"*
Generally

In its Reply, Petitioner argues the skilled artisan would have been motivated to combine Bolle's "segmentation process," generally, with Ogasawara's teachings to achieve the invention of claim 1. *See, e.g.*, Pet. Reply 2, 11. Similarly, during the oral hearing, Petitioner's counsel characterized the Petition's discussion of motivation to combine Ogasawara and Bolle as "based on the benefits of segmentation as a whole, and Bolle teaches that multiple segmentation methods are part of its segmentation algorithm." Tr. 7:8–10. To the extent that this is true, it only further fuels our view that the Petition does not set forth sufficiently, let alone with particularity, why the ordinarily skilled artisan would have had a *rational* reason to combine *specific* teachings of Ogasawara and Bolle to achieve the invention of claim 1.

Petitioner's argument here also contradicts its entire basis for reaching to Bolle in the first place, namely, that Ogasawara's mere mention of "[a]dvanced pattern recognition software" to recognize objects in images under certain conditions, without more, is insufficient to teach the invention recited in claim 1. *See* Pet. 28, 30. Petitioner's reliance on Bolle's teaching of "segmentation" generally, without relying on teachings of a particular segmentation technique, adds little to nothing to Ogasawara. Regardless, for the same reasons we do not find Bolle's specific "image segmentation" teachings to support a rational reason to combine Ogasawara and Bolle (*see supra* Sections III.D.3.a.1–a.3), *a fortiori*, we do not find Bolle's generalized "image segmentation" teachings to do so either.

(5) *Conclusion*

For the reasons expressed above, and based on the complete record before us, we conclude Petitioner has not proven that an ordinarily skilled artisan would have had a rational reason to combine the teachings of Ogasawara and Bolle to achieve the recited invention of claim 1. Thus, we determine that Petitioner has not demonstrated by a preponderance of the evidence that independent claim 1 would have been obvious over the combination of Ogasawara and Bolle.

b) *Dependent Claims 10, 12, 13, and 15*

Petitioner submits the same arguments and evidence concerning alleged reasons to combine the teachings of Ogasawara and Bolle for dependent claims 10, 12, 13, and 15 as for independent claim 1. *See* Pet. 27–34, 50–57. Petitioner's evidentiary showing for dependent claims 10, 12, 13, and 15 (*see* Pet. 27–34, 50–57) does not remedy the deficiencies in its evidentiary showing for independent claim 1. *See supra* Section

III.D.3.a. Thus, we determine that Petitioner has not demonstrated by a preponderance of the evidence that any of dependent cl claims 10, 12, 13, and 15 would have been obvious over the combination of Ogasawara and Bolle.

4. *Alleged Reasonable Expectation of Success in Combining the Relevant Teachings of Ogasawara and Bolle*

Petitioner’s contention that the combined teachings of Ogasawara and Bolle render obvious the inventions of claims 1, 10, 12, 13, and 15 (Pet. 27–57) also implicates the fundamental issue of whether the ordinarily skilled artisan would have had a reasonable expectation of success in combining such teachings. The parties dispute, *inter alia*, whether Petitioner has proven that the skilled artisan would have had such a reasonable expectation of success. Pet. 7, 31–34; PO Resp. 55–57; PO Sur-Reply 16–19. We find this issue also dispositive in this case as to all Challenged Claims, as discussed below.

“An obviousness determination requires finding that [an ordinarily skilled artisan] would have been motivated to combine or modify the teachings in the prior art and *would have had a reasonable expectation of success in doing so.*” *Regents of Univ. of Cal.*, 903 F.3d at 1291 (emphasis added); *see also OSI Pharms., LLC v. Apotex Inc.*, 939 F.3d 1375, 1382–85 (Fed. Cir. 2019); *Samsung Elecs. Co., Ltd. v. Elm 3DS Innovations, LLC*, 925 F.3d 1373, 1380–83 (Fed. Cir. 2019). “[A] reasonable expectation of success, not absolute predictability’ supports a conclusion of obviousness.” *Yamanouchi Pharm. Co. v. Danbury Pharmacal, Inc.*, 231 F.3d 1339, 1343 (Fed. Cir. 2000); *see Intel Corp. v. Alacritech, Inc.*, 817 F. App’x 1014, 1016–17 (Fed. Cir. 2020). “The reasonable-expectation-of-success analysis

must be tied to the scope of the claimed invention.” *Teva Pharms. USA, Inc. v. Corcept Therapeutics, Inc.*, 18 F.4th 1377, 1381 (Fed. Cir. 2021).

“Whether the prior art discloses a claim limitation, whether a skilled artisan would have been motivated to modify or combine teachings in the prior art, *and whether she would have had a reasonable expectation of success in doing so are questions of fact.*” *Univ. of Strathclyde v. Clear-Vu Lighting LLC*, 17 F.4th 155, 160 (Fed. Cir. 2021) (emphasis added).

In our Institution Decision, we preliminarily found “Petitioner’s cited evidence provides sufficient rational reasons for purposes of institution to combine Ogasawara and Bolle *with a reasonable expectation of success.*” Dec. 39 (emphasis added). However, on further review of the Petition and further consideration of the parties’ briefing on this issue and the relevant case law, and based on the complete record before us, we now conclude otherwise. *See Fanduel*, 966 F.3d at 1340; *Magnum Oil Tools*, 829 F.3d at 1376. In particular, even if Petitioner were found to have proven a rational reason to combine the relevant teachings of Ogasawara and Bolle, we determine that Petitioner has not proven, by a preponderance of the evidence, that the ordinarily skilled artisan would have had a reasonable expectation of success in doing so (i.e., in implementing Bolle’s segmentation methods on Ogasawara’s videophone).

Petitioner argues the skilled artisan “would have had a reasonable expectation of success combining Bolle’s image segmentation and matching techniques with Ogasawara’s system.” Pet. 31. Petitioner argues the skilled artisan “would have combined Bolle’s image segmentation and matching techniques with Ogasawara’s system using the hardware and techniques already described in each reference, and each system would perform the

same in the combined system,” and “would have recognized that using Bolle’s image segmentation and matching techniques with Ogasawara’s system would be nothing more than combining prior art elements according to known methods to yield predictable results or the application of known techniques to improve a known device to yield predictable results.”

Pet. 31–32 (citing Ex. 1003 ¶ 100); see Pet. 33 (“[The skilled artisan] would have thus recognized that Bolle’s algorithmic methods of image segmentation and matching are compatible with Ogasawara’s system.”).

Patent Owner contends “Petitioner’s articulated reasoning for a reasonable expectation of success is boilerplate and conclusory.” PO Resp. 55. Patent Owner argues the skilled artisan would not have had a *reasonable* expectation of success “because an untrained shopping customer using Ogasawara’s mobile phone would not have been able to take the precise dual images required by Bolle’s system.” *Id.* at 56–57 (discussing Bolle’s Figure 3*a* and 3*b* embodiments); see PO Sur-Reply 16–19.

As for Bolle’s Figure 3*a* embodiment, Patent Owner argues:

Bolle’s first segmentation technique requires two still photographs [] without any pixel variation in the background. Considering first the segmentation technique where one image is of a background without the target object, and the other image is the same exact background with the target object, a shopping customer would not be able to take the two required photographs with their phone. Bajaj ¶ 51. For example, they would not be able to reliably situate themselves to take the necessary photograph from the same perspective, distance, etc.

PO Resp. 56. For these reasons, and also for reasons discussed above in Section III.D.3.a.1 and below, we agree with Patent Owner, and find Petitioner has not proven that the ordinarily skilled artisan at the relevant time would have considered it feasible for a consumer/shopper to have to

hold a mobile device in space and take two, spatially registered images of scene while that consumer moved a target object into or out of the scene between the taking of those two images.

Petitioner does not adequately explain how such activity could have been performed without causing substantial misalignment that undermines the spatial registration requirement of Bolle. Petitioner does refer to Bolle's description of taking the two pictures in "quick succession," Pet. Reply 2, 6, 12–14, but (1) the "quick succession" description of Bolle relates to Bolle's Figure 3*b* embodiment which does not involve moving an object into or out of a background (Ex. 1006, 10:24–43), and (2) Petitioner does not explain how holding Ogasawara's videophone still gets easier for the shopper if the shopper has to move an object either into or out of a scene *even quicker*.

As for Bolle's Figure 3*b* embodiment, and also as discussed above in Section III.D.3.a.2, Patent Owner argues "Bolle's teaching of capturing images in 'quick succession' is a solution for a ***stationary*** or ***fixed-position*** camera," and "Ogasawara's mobile videophone is incompatible with this system." PO Sur-Reply 16–17; see PO Resp. 25–58. Patent Owner argues "Petitioner also does not establish that Ogasawara's videophone was capable of capturing images in quick succession," and "[a]s Dr. Rodriguez admitted, Bolle does not explain how its teaching of 'quick succession' is performed." PO Sur-Reply 17; see *id.* at 17–18 ("[T]he Reply also does not describe how Ogasawara's videophone could take images in quick succession."). Patent Owner argues "Petitioner's new combination also requires 'Ogasawara's videophone [to] include a synchronized camera flash to illuminate the object for Bolle's segmentation,'" but "Petitioner provides no evidence that

integrating a flip-up flash, such as the one disclosed in Parulski,¹³ would have integrated with Ogasawara's videophone and still meet Bolle's segmentation requirements." *Id.* at 18–19 (quoting Pet. Reply 21). Patent Owner argues Petitioner is silent as to how Parulski adds anything to support Petitioner's reasonable expectation of success argument:

Petitioner . . . does not, for example, establish that Parulski's flash meets Bolle's requirement that lighting be "nonmonochromatic and of a constant frequency distribution" or that it is "infrared" or "ultra violet." EX1006 7:7-14. Nor does Petitioner provide any evidence that Parulski's flash is similar to the exemplary flashes described by Bolle. *Id.* 7:14-17. Thus, Petitioner's revised combination fails to establish that Bolle's system could be successfully combined with Ogasawara, and is thus inadequate.

Id. at 19. For these reasons, and also for reasons discussed above in Section III.D.3.a.2 and below, we agree with Patent Owner, and find Petitioner has not proven that the ordinarily skilled artisan at the relevant time would have considered it feasible for a consumer/shopper to have to hold a mobile device in space and take two, spatially registered images of scene, one with the camera flash on and another with the camera flash off (both with the object in the background).

Petitioner's expert, Dr. Rodriguez, testifies that "videophones with flash functionality were known by 2000," and Dr. Rodriguez identifies Parulski (Ex. 1062) as describing such a mobile phone with an integrated flip-up flash unit. Ex. 1050 ¶ 81. But Dr. Rodriguez simply states that videophones with flash functionality "were known by 2000," not "well

¹³ Parulski discloses "flip-out flash unit 24 that protects the lens 22 when the camera module 10 is not in use." Ex. 1062, 3:16–17.

known by 2000.” *Id.* The difference is not insignificant, because if such flash functionality was just known, a reference showing that may be formally required as a portion of the alleged ground of unpatentability, e.g., Ogasawara, Bolle, and Parulski. But Parulski is not in the specific ground of unpatentability asserted by Petitioner. If a feature was “well known” to one with ordinary skill in the art, Parulski need not be named in the alleged ground of unpatentability and can still be relied on by Petitioner to show basic knowledge or fundamental skill that would have been possessed by one with ordinary skill in the art. Dr. Rodriguez’s testimony does not persuade us that a flash functionality was so well known for videophones in 2000 that that was basic knowledge or fundamental skill to one with ordinary skill in the art without need to include a pertinent reference in the alleged ground of unpatentability. We note further that even Parulski itself does not show a videophone. On this record, Petitioner has not shown any videophone with an early enough date that operates with an integrated flash for taking a video.

In addition, Petitioner asserts:

For illumination-based segmentation, Bolle further teaches using a camera flash or “strobe” to illuminate an object and synchronizing the timing of the strobe with the camera. Ex. 1006, 9:59–60 (CCD digital camera includes “a camera flash”), 10:9–16 (“The control may be a part of the light 110 as a timing device such as in a strobe. The control may be synchronized with the camera ... [and was] well known.”). [The skilled artisan] would therefore understand that the camera in Ogasawara’s videophone would include a synchronized camera flash to illuminate the target for image segmentation. Ex. 1050, ¶¶ 80–83.

Pet. Reply 21. Thus, assuming that Ogasawara’s videophone is modified to include flash functionality for taking a video, Petitioner urges that a retail

shopper could have held Ogasawara's videophone sufficiently still to take two frames while the flash is automatically synchronized to turn on and off at the appropriate time.

Petitioner, however, has not shown the existence, prior to the critical date, of an integrated flash that can be programmed in this manner, even assuming that the processing circuitry of Ogasawara is sufficiently sophisticated to be so programmed. Specifically, Petitioner has not shown that Parulski's flip-up flash can be turned on and off so quickly that it can be controlled on a frame by frame basis with respect to multiple images (or video) taken. For Bolle's Figure 3*b* segmentation method, light from a flash cannot take time to emit and to cease but essentially must be instantly on and off to be programmable on a "quick succession" or per frame basis.

Petitioner has not shown that Parulski's flip-up flash is of that type. It is possible that Parulski's flash is turned on when it is flipped up, and is turned off when it is flipped down. It also is possible that when charging is needed, Parulski's flash starts charging after it has been flipped up and the user has to wait some time before the flash can function. Such characteristics would be incompatible with the segmentation method of Bolle's Figure 3*b* embodiment performed with flash programmable on a per frame basis.

Regardless, the burden of proving a reasonable expectation of success to combine the relevant teachings of Ogasawara and Bolle *is on Petitioner* and never shifts to Patent Owner. *Dynamic Drinkware*, 800 F.3d at 1378; *Eli Lilly & Co. v. Teva Pharms. Int'l GmbH*, 8 F.4th 1331, 1348–49 (Fed. Cir. 2021) ("[I]t was, at all times, [petitioner's] burden to show that the claims would have been obvious, including that a skilled artisan would have had a

reasonable expectation of success in achieving the claimed invention.”).

We find Petitioner’s alleged evidence fails to do so.

For the reasons expressed above, and based on the complete record before us, we conclude that Petitioner has not sufficiently evidenced a reasonable expectation of success in modifying Ogasawara to implement Bolle’s image segmentation techniques to achieve the recited inventions of claims 1, 10, 12, 13, and 15. Thus, we determine that Petitioner has not demonstrated by a preponderance of the evidence that claims 1, 10, 12, 13, and 15 would have been obvious over the combination of Ogasawara and Bolle.

5. *Summary*

For the reasons expressed above, and based on the complete record before us, we conclude that Petitioner has not sufficiently evidenced that an ordinarily skilled artisan would have had (1) a rational reason to combine the teachings of Ogasawara and Bolle to achieve the recited inventions of claims 1, 10, 12, 13, and 15; and (2) a reasonable expectation of success in modifying Ogasawara to implement Bolle’s image segmentation techniques to achieve the recited inventions of claims 1, 10, 12, 13, and 15. Thus, we determine that Petitioner has not demonstrated by a preponderance of the evidence that claims 1, 10, 12, 13, and 15 would have been obvious over the combination of Ogasawara and Bolle.

IV. PETITIONER’S MOTION TO EXCLUDE EVIDENCE

Petitioner moves to exclude some or all of paragraphs 22–27, 29–42, 44, 46–49, 51–53, and 55 of the Supplemental Declaration of Chandrajit Bajaj, Ph.D. (Ex. 2007), Patent Owner’s expert, as well as the images contained in paragraphs 36–39. Mot. Excl. 1–15.

A. Allegation of Testimony being Conclusory

On the basis of statements being conclusory or opinions lacking supporting facts or data, Petitioner seeks to exclude all of paragraphs 25–27, 29, 33–42, and 51–53, and parts of paragraphs 22–24, 30–32, 44, 46–49, and 55 of Dr. Bajaj’s Supplemental Declaration. Mot. Excl. 4–5. Petitioner does not specifically address the content of each paragraph, but discusses only what it asserts to be exemplary. *Id.* at 5–10. Specifically, Petitioner provides four examples. *Id.*

As a first example, Petitioner asserts: “Dr. Bajaj testifies in Paragraph 32 of Exhibit 2007 that ‘a person of ordinary skill in the art would have known that a wireless videophone available in the late-1990s would have significantly less processing power than any of the hardware discussed in Bolle.’ Ex. 2007, ¶ 32. Dr. Bajaj, however, provides no facts or data to support this bald assertion.” Mot. Excl. 5. We disagree that Dr. Bajaj has to show more. As an expert in the field, Dr. Bajaj can testify as to his opinion regarding the state of the art at a certain time period, without need of specific underlying material. The subject is not one for which Dr. Bajaj needs to run an experiment to observe the results. In the absence of supporting material, the testimony may be challenged as lacking sufficient credibility, but the testimony is not inadmissible. In any event, as discussed above, our decision assumes that Ogasawara’s videophone has processing circuitry just as powerful as Bolle’s computer. The testimony did not result in any detriment to Petitioner.

As a second example, Petitioner asserts: “Dr. Bajaj testifies in Paragraphs 23, 25, 29–31, 33–34, 51–53, and 55 of Exhibit 2007 that two images are *required* by Bolle for segmentation. Again, this opinion is

conclusory without any supporting facts or data.” Mot. Excl. 5.

We disagree that there is no support for Dr. Bajaj’s testimony. Bolle’s disclosure describing the Figure 3a and Figure 3b embodiments provide such support. *See* Ex. 1006, Figs. 3a, 3b (and related disclosure).

Petitioner further asserts:

Claim 32 of Bolle, for example, discloses segmentation methods contemplated by Bolle that do not require two images. Ex. 1006, 24:15–42. Dr. Bajaj himself acknowledges that Bolle’s segmentation methods (that require comparing two images) are merely “preferred” methods (Ex. 1063, 66:15–67:20) and admits that segmentation without comparing two images was known at the time of the invention (*id.*, 68:15–25). Yet, Dr. Bajaj did not consider Claim 32 in his analysis. Ex. 1063, 68:15–25, 98:6–99:14, 100:2–11.

Mot. Excl. 6; *see id.* at 6–7. The arguments are misplaced. That single image segmentation methods were known at that time is an entirely separate question from what segmentation methods are disclosed by Bolle. Here, we are not persuaded that claim 32 discloses a single image segmentation method. *See supra* Section III.D.3.a.3. Further, that claim 32 of Bolle may be read to cover segmentation methods not requiring two images does not necessarily mean Bolle discloses a segmentation method not requiring two images. Similarly, Bolle characterizing his disclosed embodiments as preferred does not mean Bolle discloses other segmentation methods. We find no contradiction. Even if there is any contradiction, that merely affects credibility of Dr. Bajaj’s testimony and is not a basis for excluding that testimony.

Petitioner further asserts:

Similarly, Dr. Bajaj’s deposition testimony contradicts his unsupported and irrelevant assertions that Ogasawara is only a “bar-code based system.” Ex. 2007, ¶¶ 44, 46–48. He testifies

in his deposition that Ogasawara discloses character and pattern recognition software. Ex. 1063, 40:10–23, 42:4–13, 43:14–44:18, 46:3–47:16. He also testifies that a [skilled artisan] would have been aware of the character and pattern recognition software routines disclosed in Ogasawara. *Id.*, 51:1–23, 61:16–62:4.

Mot. Excl. 7. We disagree that there is no support for Dr. Bajaj’s testimony such that the testimony should be excluded. That there is conflicting evidence, even overwhelming conflicting evidence, does not mean the testimony is inadmissible. Further, our determination herein that Petitioner does not sufficiently evidence a rational reason to combine Ogasawara and Bolle does not rely, in any part, on Dr. Bajaj’s testimony that Ogasawara is a “bar-code based system.”

As the third example, Petitioner asserts:

Dr. Bajaj provides no basis for his opinion that Bolle’s system is limited to a stationary system (Ex. 2007, ¶¶ 32–34, 55), which is based on the unsupported conclusion that two images are *required* for Bolle’s segmentation (*id.*, ¶¶ 33–34) and the unsupported conclusion that a user could not stabilize Ogasawara’s mobile videophone to take two images for Bolle’s two-image segmentation methods (*id.*, ¶¶ 23–24, 34, 55). Beyond failing to consider Bolle’s other segmentation methods, as discussed above, Dr. Bajaj ignores Bolle’s disclosure that, as an alternative to a stationary system, spatial registration “can be ensured by [] acquiring the first and second image in quick succession.” Ex. 1006, 10:41–43.

Mot. Excl. 7–8. We disagree that there is no basis for Dr. Bajaj’s opinion that Bolle’s system is limited to a stationary system. There is support in Figures 1 and 4 of Bolle, and also in Bolle’s description of spatial registration for taking a first and a second image (Ex. 1006, 10:31–44). We also disagree that Dr. Bajaj’s conclusion that “a user could not stabilize Ogasawara’s mobile videophone to take two images for Bolle’s two-image

segmentation methods” is without evidentiary support. Bolle’s description of spatial registration constitutes such support. That Bolle also describes taking pictures in quick succession to address the effects of some movement goes to the weight of the evidence and is not a basis to exclude Dr. Bajaj’s testimony.

As a fourth example, Petitioner asserts:

Dr. Bajaj provides no basis for his statements that Bolle could only work in a controlled “lab” or “orchestrated production” environment and provides unsupported speculation on various scenes, usage scenarios, situations, environments, and cases. Ex. 2007, ¶¶ 25–27. He does not describe any particular scenes and usage scenarios that are not applicable. He fails to provide any facts or analysis about which heterogeneous retail environments would lead to failure and under what conditions. He also gives no details about the “numerous low-contrast cases” (*id.*, ¶ 26), including no example cases, reasoning, or citation to authoritative sources. He offers no reasoning or evidence to support that any errors made in the boundary separation would necessarily lead to incorrect object features (i.e., examples of the kind of errors and what would lead to the errors). Dr. Bajaj also failed to explain what “relative brightness/darkness” conditions lead to “large classification error and incorrect object-background separation” (*id.*, ¶ 27). He provided no examples or quantification of such error. Again, Dr. Bajaj performed no testing to substantiate any of this speculation. Ex. 1063, 120:22–121:8; 121:23–122:3.

Mot. Excl. 8–9.

Patent Owner argues, with respect to Dr. Bajaj’s testimony in paragraphs 25–27 of Exhibit 2007, that Dr. Bajaj “[e]xplain[s] with detailed analysis how the relative contrast for the object with respect to the background could limit deployment of the Bolle’s method and therefore it ‘could only effectively be deployed . . . only in a controlled “lab” or “orchestrated production” environment.’” Paper 35, 9; *see id.* at 4–9.

We disagree with Petitioner that there is no basis given for Dr. Bajaj's testimony in paragraphs 25–27, for the reasons stated by Patent Owner (Paper 35, 9), and given Dr. Bajaj's discussion of the importance of the relative contrast for an object with respect to its background to Bolle's segmentation techniques. Moreover, Dr. Bajaj's continued testimony in subsequent paragraph 28 (to which Petitioner does not object), concerning the criticality of Bolle's "threshold T for separating the object pixels from the background pixels" (Ex. 2007 ¶ 28 (citing Ex. 1006, 11:15–31)), provides further basis for Dr. Bajaj's testimony in preceding paragraphs 25–27. *See* Ex. 2007 ¶¶ 25–29; Ex. 1006, 10:59–11:31. Petitioner's complaints here that Dr. Bajaj fails to provide examples, testing results, or more support merely affect credibility of Dr. Bajaj's testimony and are not a basis for excluding that testimony. Regardless, our determination herein that Petitioner does not sufficiently evidence a rational reason to combine Ogasawara and Bolle does not rely, in any part, on Dr. Bajaj's testimony in the subject paragraphs 25–27.

B. Allegation of Irrelevance

Petitioner asserts that paragraphs 35–42 of Dr. Bajaj's Supplemental Declaration (Ex. 2007) should be excluded because they focus on symbols, e.g., barcodes, "which (i) did not form the bases of the instituted grounds, and (ii) are contrary to the district court's claim constructions adopted by the Board." Mot. Excl. 10. Petitioner explains that opinions regarding Ogasawara's symbols and barcodes "have no bearing on the prior art combinations in this IPR (which are specifically for items without symbols) or the Challenged Claims (which have not been construed to include symbols)." *Id.* at 12. According to Petitioner, an expert's testimony that has

no bearing on the issues in the case and ignores the tribunal's claim construction is irrelevant. *Id.*

The testimony regarding Ogasawara's barcodes may be misplaced but is not irrelevant to Patent Owner's theory of lack of a rational reason to combine references. Patent Owner, in its presentation, is free to emphasize the symbol or bar code aspect of Ogasawara more than it does the non-symbol aspect of Ogasawara. In any event, our determination that Petitioner does not sufficiently evidence a rational reason to combine Ogasawara and Bolle does not in any way rely on Patent Owner's emphasizing Ogasawara's symbol or barcode disclosures over Ogasawara's disclosure of recognizing visual characteristics of an object. The same is true for our determination that Petitioner does not sufficiently evidence a reasonable expectation of success in implementing a system according to the combined teachings. Petitioner is concerned that we would be confused by the discussion pertaining to Ogasawara's bar codes. We are not.

C. The Images

Petitioner makes numerous contentions regarding the images reflected in paragraphs 36–39 of Exhibit 2007, and referenced in paragraphs 35–42. Mot. Excl. 12–15. Petitioner asserts that the images supposedly are representations of bar codes and data matrices printed on various surfaces. *Id.* at 12. Petitioner asserts that the images are evidence without foundation because “Patent Owner and Dr. Bajaj identified no details regarding the origin of the images or the method and circumstances under which they were produced.” *Id.* at 12–13.

Petitioner also asserts that the images “appear to include markings/etchings on the objects and manipulated lighting in the images,”

and that “Dr. Bajaj provides no basis or explanation for the manipulations or annotations.” Mot. Excl. 13. For that reason, Petitioner asserts the images are unreliable and should be excluded. *Id.* Petitioner further asserts that the images lack authentication and thus Patent Owner has not demonstrated that they are what they are purported to be. *Id.* at 13–14.

Petitioner further asserts that the images should be excluded because they (“including the original, copy, or any other evidence”) “have not been produced to prove the content.” Mot. Excl. 15 (citing Fed. R. Evid. 1001–1007). Petitioner asserts that “Patent Owner has provided no explanation as to why it did not submit supporting evidence for these images along with its Patent Owner’s Response.” *Id.*

All of the above-noted contentions are misplaced. The images themselves constitute the opinion of Dr. Bajaj on what some printed bar codes and data matrices on surfaces may look like under certain conditions. They are not items of evidence, separate from the opinion, submitted to prove anything, and they are not purported by Dr. Bajaj to have a specific source or origin. Even if they are assumed as evidence relied on by Dr. Bajaj, the facts or data relied on by an expert to form an opinion need not be admissible for the opinion to be admitted. Fed. R. Evid. 703.

In any event, our determination that Petitioner does not sufficiently evidence a rational reason to combine Ogasawara and Bolle and a reasonable expectation of success in doing so does not in any way rely on these images in paragraph 36–39 of Dr. Bajaj’s Supplemental Declaration.

D. Allegation of Hearsay

Petitioner further asserts that paragraphs 35–42 “should be excluded as containing, referencing, and relying upon out-of-court statements, which

are hearsay under Fed. R. Evid. 801 and 802 and for which PO has shown no exception.” Mot. Excl. 15. The assertion is too vague. Petitioner does not specifically identify any such statement and we see none.¹⁴ Further, as discussed above in Section IV.C, the facts or data relied on by an expert to form an opinion need not be admissible for the opinion to be admitted. Fed. R. Evid. 703.

In any event, we have not relied on these images in determining that Petitioner does not sufficiently evidence a rational reason to combine Ogasawara and Bolle and a reasonable expectation of success in doing so.

E. Alleged Demonstratives

Petitioner asserts that the images “should be excluded to the extent that they are intended as demonstratives.” Mot. Excl. 15. The assertion is without merit, because Dr. Bajaj’s Supplemental Declaration (Ex. 2007), including all contents thereof, is not a demonstrative exhibit and has not been submitted by Patent Owner as a demonstrative exhibit. Patent Owner’s demonstrative exhibit was submitted as Exhibit 2012. As discussed above in Section IV.C, the images are the opinion of Dr. Bajaj on what some bar codes and data matrices may look like under certain conditions.

F. Conclusion

Petitioner’s Motion to Exclude Evidence is *denied*.

¹⁴ The assertion also conflicts with the contention of Petitioner that “Patent Owner and Dr. Bajaj identified no details regarding the origin of the images or the method and circumstances under which they were produced.” Mot. Excl. 12–13.

V. CONCLUSION

As set forth in the following table, Petitioner has not proven, by a preponderance of the evidence, that any of the Challenged Claims are unpatentable:

Claim(s)	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 10, 12, 13, 15	103	Ogasawara, Bolle		1, 10, 12, 13, 15

VI. ORDER

Upon consideration of the record, it is:

ORDERED that claims 1, 10, 12, 13, and 15 of U.S. Patent No. 8,478,036 B2 have not been shown, by a preponderance of the evidence, to be unpatentable;

FURTHER ORDERED that Petitioner's Motion to Exclude Evidence (Paper 34) is *denied*; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to this 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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Patent 8,478,036 B2

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