UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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GOOGLE INC.,
Petitioner,

v.

INTELLECTUAL VENTURES II LLC,
Patent Owner.

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Case IPR2014-00787
Patent 6,121,960

Before MICHAEL W. KIM, PATRICK R. SCANLON, and
KRISTINA M. KALAN, *Administrative Patent Judges.*

SCANLON, *Administrative Patent Judge.*

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

A.   Background

Petitioner, Google Inc., filed a Petition (Paper 1, "Pet.") requesting an *inter partes* review of claims 1–3, 5, 7–10, 12–14, 19–22, and 24–30 of U.S. Patent No. 6,121,960 (Ex. 1001, "the '960 patent") pursuant to 35 U.S.C. §§ 311–319. Patent Owner, Intellectual Ventures II LLC, subsequently filed a Preliminary Response (Paper 7, "Prelim. Resp."). On November 24, 2014, we instituted an *inter partes* review as to all challenged claims (Paper 9, "Dec. on Inst.").

After institution, Patent Owner filed a Patent Owner Response (Paper 20, "PO Resp."), and Petitioner filed a Reply (Paper 25, "Pet. Reply"). Petitioner relies on the Declaration of Jean Renard Ward (Ex. 1015) and the Second Declaration of Jean Renard Ward (Ex. 1020) in support of its contentions, and Patent Owner relies on the Declaration of Craig S. Rosenberg, Ph.D. (Ex. 2008) in support of its contentions.

Patent Owner filed a Motion for Observations (Paper 32) on the cross-examination testimony of Petitioner's declarant, Mr. Ward. Petitioner filed a response (Paper 42).

Patent Owner filed a Motion to Exclude (Paper 31) certain Exhibits submitted by Petitioner in the proceeding. Petitioner filed an Opposition to this Motion to Exclude (Paper 40), and Patent Owner filed a Reply (Paper 43).

Petitioner filed a Motion to Exclude (Paper 34) certain Exhibits submitted by Patent Owner in the proceeding. Patent Owner filed an Opposition to this Motion to Exclude (Paper 39).

An oral hearing was held on June 29, 2015. A transcript of the hearing is included in the record. Paper 52 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6(b). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 19–22 and 24–30 of the '960 patent are unpatentable. We determine also that Petitioner has not shown by a preponderance of the evidence that claims 1–3, 5, 7–10, and 12–14 of the '960 patent are unpatentable. Petitioner's Motion to Exclude and Patent Owner's Motion to Exclude both are dismissed.

B. Related Matters

The parties indicate that the '960 patent is asserted against Motorola Mobility LLC[1] in *Intellectual Ventures I LLC v. Motorola Mobility LLC*, No. 0:13-cv-61358-RSR (S.D. Fla.) and is also at issue in *Intellectual Ventures I LLC v. Canon Inc.*, No. 1:11-cv-00793-SLR (D. Del.). Pet. 1–2; Paper 5, 2. Patent Owner also indicates that the '960 patent is involved in the following district court proceeding: *Intellectual Ventures I LLC v. Nikon Corp.*, No. 1:11-cv-01025-SLR (D. Del.). Paper 5, 2.

C. The '960 Patent

The '960 patent, titled "Touch Screen Systems and Methods," issued on September 19, 2000. The '960 patent describes a screen peripheral system including a computing device that produces a main image and a touch-activated input device for generating and displaying a composite image. Ex. 1001, Abstract; 1:65–2:2. "The composite image

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[1] Petitioner indicates that Motorola Mobility LLC is Petitioner's wholly-owned subsidiary. Pet. 1.

simultaneously includes a representation of at least one key, for example a QWERTY keyboard, for activating an input function, and the main image provided by the computing device. The keyboard representation preferably is laid over the main image." *Id.* at 2:2–7. The invention includes variable-pixel controls that "determine and control which pixels of the touch screen will be used for displaying the keyboard representation and which pixels [will be used] for displaying the main image." *Id.* at 4:34–37. The "touch screen pixels may be dedicated to both the keyboard and the main image, producing a 'blended' effect." *Id.* at 4:39–41.

D.   *Illustrative Claim*

Claim 1 of the '960 patent is illustrative of the claimed subject matter:

1.   A screen peripheral system, comprising:

a computing device for providing a main image; and

a touch-activated input device for generating and displaying a composite image visible to a user of the screen peripheral system, the touch-activated input device comprising a plurality of pixels, the composite image simultaneously including:

a representation of at least one key, the representation of at least one key activating an input function; and

the main image provided by the computing device, the representation of at least one key being laid over the main image;

wherein the screen peripheral system implements variable-pixel control to form the representation of at least one key and to form the main image, the variable-pixel control causing pixels selected to form the representation of at least one key in the composite image to depend on and be activated simultaneously with pixels selected to form the main image, such that the main image and the representation of at least one key are displayed simultaneously to form the composite image;

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further wherein the variable-pixel control includes logical operators to provide different blending/merging effects such that individual pixels of the touch-activated input device can be dedicated simultaneously to both the main image and the representation of at least one key.

Ex. 1001, 12:2–29.

E. Prior Art

The instituted grounds of unpatentability in this *inter partes* review are based on the following prior art:

1. U.S. Patent No. 5,638,501, issued June 10, 1997 ("Gough") (Ex. 1007);

2. U.S. Patent No. 6,118,427, issued Sept. 12, 2000 ("Buxton") (Ex. 1009);

3. U.S. Patent No. 5,617,114, issued Apr. 1, 1997 ("Bier") (Ex. 3001);[2] and

4. U.S. Patent No. 6,317,128 B1, issued Nov. 13, 2001 ("Harrison") (Ex. 1011).

F. Instituted Grounds of Unpatentability

We instituted the instant *inter partes* review on the following grounds of unpatentability:

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[2] Petitioner identifies U.S. Patent No. 5,617,114 as Exhibit 1010. *See, e.g.*, Pet. 3. The actual document submitted as Exhibit 1010, however, is U.S. Patent No. 5,581,670, which was issued to Bier et al. on Dec. 3, 1996. We note that the two patents were issued to the same inventors and have substantially identical written descriptions. Petitioner's citations of Bier appear to refer to U.S. Patent No. 5,617,114 rather than U.S. Patent No. 5,581,670. *See, e.g., id.* at 45 (citing column 7, lines 41–45 as explaining standard input devices). Therefore, we presume the submission of U.S. Patent No. 5,581,670 to be an error and Petitioner intended to rely on U.S. Patent No. 5,617,114 in its Petition. Accordingly, we refer herein to U.S. Patent No. 5,617,114, a copy of which has been added to the record as Exhibit 3001.

Reference(s)	Basis	Claims Challenged
Gough	§ 102(e)	1–3, 5, 7–10, 12–14, 19–22, and 24–30
Buxton, Bier, and Harrison	§ 103(a)	1–3, 5, 7–10, 12–14, 19–22, and 24–30

Dec. on Inst. 21–22.

II. ANALYSIS

A.   Claim Construction

In an *inter partes* review, the Board interprets claims using the
"broadest reasonable construction in light of the specification of the patent in
which [they] appear[]." 37 C.F.R. § 42.100(b); *In re Cuozzo Speed Techs.,
LLC*, 793 F.3d 1268, 1277–79 (Fed. Cir. 2015). Under the broadest
reasonable interpretation standard, claim terms are given their ordinary and
customary meaning in view of the specification, as would be understood by
one of ordinary skill in the art at the time of the invention. *In re Translogic
Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). "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 v. AWH Corp.*, 415 F.3d 1303, 1312–17 (Fed. Cir. 2005) (en
banc)).

In this Final Written Decision, we construe only those claim terms in
controversy, and we do so only to the extent necessary to resolve the
controversy. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795,
803 (Fed. Cir. 1999). Furthermore, we expressly interpret below only those

claim terms that require analysis to resolve arguments related to the patentability of the challenged claims.

1. "Pixel"

In the Decision on Institution, we construed "pixel" to mean "[a]n abbreviation for a picture element; the smallest unit into which an image can be divided, and to which can be assigned such characteristics as gray scale, color, and intensity." Dec. on Inst. 6. Patent Owner does not dispute this interpretation. PO Resp. 6. Petitioner, however, argues that, to the extent Patent Owner disputes that the challenged claims are invalid under the Board's construction, the term "pixel" should be construed "broadly enough to cover hardware pixels as well as pixel data, or pixels stored in memory." Pet. Reply 1–2. For the reasons discussed in the Decision on Institution (*see* Dec. on Inst. 5–7), we disagree that "pixel" should include "pixel data," and we see no reason to modify our prior interpretation in light of the record developed at trial. Accordingly, we adopt this interpretation for this Final Written Decision.

2. "Bit-block-type transfer operation"

In the Decision on Institution, we construed "bit-block-type transfer operation" to mean "a programming technique that transfers or moves blocks of bits from one area of memory to another." Dec. on Inst. 8. Patent Owner does not dispute this interpretation (PO Resp. 6), and Petitioner does not address this construction in its Reply. Accordingly, after reviewing the complete record anew, we reaffirm our prior interpretation for this Final Written Decision.

3. *"Variable-pixel control"*

In the Decision on Institution, we construed "variable-pixel control" to mean "a control for varying the assigned characteristics of a pixel." Dec. on Inst. 9. Patent Owner argues that this construction should be supplemented by "taking into account the recitations in both 'wherein' clauses of each of claims 1 and 19." PO Resp. 12. Petitioner replies that "Patent Owner's attempt to import claim language found in the wherein clauses . . . into the construction of 'variable-pixel control' should be rejected" and the "Board's construction of 'variable-pixel control' is sufficient." Pet. Reply 2–3.

We agree with Petitioner. Patent Owner does not specify how the wherein clauses are to be "taken into account." Moreover, Patent Owner fails to adequately support why the wherein clauses should be read into the "variable-pixel control" term, when they themselves are independent claim limitations which will be accorded due weight on their own. Thus, based on the full record, we maintain our prior construction of "variable-pixel control" for this Final Written Decision.

4. *"Logical operators"*

In the Petition, Petitioner proposed that the term "logical operator" in claim 1 be construed as an operator used for a logical operation used to combine sets (or blocks) of pixels. Pet. 11. Patent Owner argues that the broadest reasonable interpretation of the term "logical operators" is "Boolean logic operators." *Id.* (citing Ex. 2008 ¶ 65). In support of this interpretation, Patent Owner argues that "Microsoft Computer Dictionary defines a logical operator as a Boolean logic operator" and "Academic Press Dictionary of Science and Technology provides that 'Boolean operator' is

'[a] *logic operator* whose operands and result are variables that can assume one of only two states.'" *Id.* (citing Ex. 2006, 69; Ex. 2010 (emphasis added)).

We are not persuaded that the evidence supports either Petitioner's or Patent Owner's proposed constructions. Petitioner does not provide any evidence or analysis in support their proposed construction. Concerning Patent Owner's assertion, the Microsoft Computer Dictionary does not define a logical operator as a Boolean logic operator—it merely indicates that a "Boolean operator" can also be called a "logical operator." Ex. 2006, 69. Instead, the Microsoft Computer Dictionary defines a logical operator as "[a]n operator that manipulates binary values at the bit level" and indicates that "*[i]n some programming languages*, logical operators are identical to Boolean operators." *Id.* at 317 (emphasis added). We agree with Petitioner that this definition suggests that, in other programming languages, logical operators are not identical to Boolean operators and not all logical operators are Boolean operators. *See* Tr. 19. Furthermore, the Academic Press Dictionary of Science and Technology definition cited by Patent Owner suggests that a Boolean operator is a type of logic operator and does not support the assertion that all logical operators are Boolean operators. Ex. 2010, 1.

Based on the above, we determine that the broadest reasonable interpretation of "logical operators" for the purpose of this Final Written Decision is "operators that manipulate binary values at the bit level." We determine also that this construction is consistent with the Specification, which presents, in column 5, a table summarizing typical operations that can be used to provide blending/merging effects. Ex. 1001, 4:65–67. This table

depicts how various operations manipulate binary values of the "Source,"
"Destination," and "Mask." *Id.* at 5:1–20.

> 5. *"Blended shadow of the representation of at least one key and*
> *the main image"*

Patent Owner argues that, "[u]nder the broadest reasonable
interpretation, the term 'blended shadow of the representation of at least one
key and the main image' means 'shadow or shading at least partially
surrounding at least one key.'" PO Resp. 18 (citing Ex. 2008 ¶ 64). Patent
Owner bases this interpretation on the fact that Figures 4 and 5 of the '960
patent show keys that are partially surrounded by shadowing or shading. *Id.*
at 17–18.

Petitioner proposes that "blended shadow" should be construed to
mean "a portion of a composite image in which the main image is visible
through the overlaid image as a result of combining the data from
corresponding pixels from the main and overlaid images" and contends that
this construction is consistent with the Specification of the '960 patent.
Pet. 14 (citing Ex. 1015, 31); Pet. Reply 9. Petitioner argues that Patent
Owner's proposed construction "is contrary to the claims and the
specification of the '960 Patent and is therefore incorrect." Pet. Reply 9.
Petitioner also argues that:

> Patent Owner's proposed construction that "blended
> shadow" relates to a shadow that "partially surround[s] at
> least one key" has no support in the intrinsic evidence.
> (Response at 39.) The word "surround" (or any variation)
> does not appear in the patent; the '960 specification
> suggests no more than that the entire key image is
> transparent, allowing the main image to "bleed through."
> Figures 4 and 5 of the '960 Patent show the entire keys,
> including the letters on the keys, as "dotted" or solid lines.

> (Second Ward Decl., Ex. 1020, ¶ 28.) They are not, as
> Patent Owner would have it, just the outlines surrounding
> the keys. (*Id.*)

Id. at 10–11.

We agree with Petitioner. Although Figures 4 and 5 of the '960 patent show keys that are partially surrounded by shadowing or shading, there is no suggestion in the Specification that the "blended shadow" recited in the claims should be limited to only this shadowing. The claim language itself, referring to a blended shadow *of the representation of at least one key and the main image* (*see* claim 24), indicates explicitly that the blended shadow incorporates both the key image and the main image and, thus, should not be limited to the shadowing surrounding the keys.

Accordingly, based on the full record, we adopt Petitioner's proposed construction of "blended shadow" as "a portion of a composite image in which the main image is visible through the overlaid image as a result of combining the data from corresponding pixels from the main and overlaid images" for the purpose of this Final Written Decision.

B.   *Asserted Anticipation by Gough*

Petitioner challenges claims 1–3, 5, 7–10, 12–14, 19–22, and 24–30 as anticipated under 35 U.S.C. § 102(e) by Gough. Pet. 3, 15–28.

1.   *Overview of Gough*

Gough discloses providing "a transparent overlay image over a base image provided on a screen of a pen computer system." Ex. 1007, 2:12–14. In one embodiment, pen computer system 10 includes, *inter alia*, central processing unit (CPU) 12 and display assembly 20. *Id.* at 4:32–36. Display assembly 20 is an input and output device. *Id.* at 4:59–60. When operating as an output device, display assembly 20 displays data on a suitable screen.

Id. at 4:62–64. The input device, or "tablet," of display assembly 20 can be a thin, clear membrane that is sensitive to the position of a stylus on its surface. *Id.* at 4:67–5:2.

CPU 12 "produces data which is output to the display assembly 20 to produce appropriate images on its screen." *Id.* at 5:39–41. For instance, screen 40 can display desktop image 42, including window 44 and various icons. *Id.* at 5:48–63, Fig. 2. Screen 40 also can display keyboard image 64 over window 44 and some of the icons. *Id.* at 6:16–28, Fig. 3. Keyboard image 64 can be converted into translucent keyboard image 64' by tapping on icon 68. *Id.* at 6:50–57, Fig. 4.

Referring to Figure 7, Gough discloses a process of blending a main image (first screen image 116) with a keyboard image (second image 118) to form blended image 120. *Id.* at 8:67–9:5. Gough's Figures 10a–10f, reproduced below, illustrate this blending process:

Fig. 10a

Fig. 10b

Fig. 10c

Fig. 10d
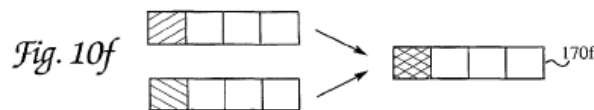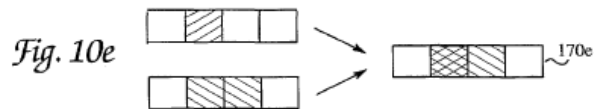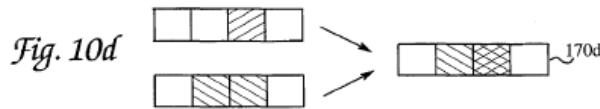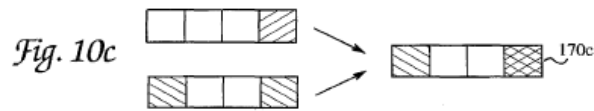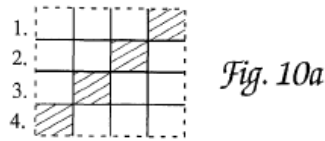
Fig. 10e

Fig. 10f

Figures 10a–10f illustrate a computer-implemented
blending process.

Gough states that:

> FIG. 10A represents the RAM shield buffer within the
> shield rectangle,[3] and has been divided into 16
> individually-blendable units.[4] These units are arranged in

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[3] The "shield rectangle" refers to "the rectangle of the window to be
developed by the application program" (e.g., window 44). Ex. 1007, 9:27–30.
The "RAM shield buffer" presumably is intended to be the "RAM screen
buffer," which refers to a random access memory (RAM) buffer storing a
copy of first screen image 116. *Id.* at 9:37–40.

[4] The "blendable units" refer to divisions of a shield rectangle, where each
unit "can be anywhere in the range of 1 to 32 pixels." Ex. 1007, 10:1–3.

> a four-by-four matrix, where the rows have been numbered
> 1, 2, 3, and 4. FIG. **10**B illustrates the RAM screen
> overlay buffer[5] in the shield rectangle, and again has 16
> individually-blendable units formed in a four-by-four
> array, with the rows numbered 1, 2, 3, and 4.

Id. at 10:24–31 (footnotes added). RAM screen buffer data and RAM
overlay image buffer data are retrieved for each blendable unit, and the
retrieved data are blended to form blended data for each blendable unit. *Id.*
at 10:5–10. Figures 10c–10f show the resulting blended rows once each set
of corresponding rows of the screen buffer and the screen overlay buffer are
blended together. *Id.* at 10:31–38. Gough's blending process "allows a base
image [(e.g., desktop image 42)] on the screen 40 to be seen through a
translucent overlay image [(e.g., keyboard image 64')]." *Id.* at 10:38–40.

    2.   *Claims 1–3, 5, 7–10, and 12–14*

Petitioner presents a claim chart identifying where the individual
features of the challenged claims are alleged to be found in Gough. Pet. 17–
28. Regarding claim 1, Petitioner argues that "Gough uses 'variable-pixel
control' in its disclosed blending engine, such that (for example) a
translucent keyboard can be superimposed on the main image." *Id.* at 16
(citing Ex. 1007, 6:51–58; 8:67–9:6; 10:23–41). Petitioner also asserts that,
as a result of Gough's blending process, "each display pixel is 'dedicated
simultaneously' to both images, and both images are displayed
simultaneously." *Id.*

Regarding the claim 1 recitation of "logical operators," Patent Owner
argues that, "[w]hile Figures 10A–10F of Gough illustrate blending two
images, Gough does not explain ***how*** the images are blended together," and,

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[5] The "RAM screen overlay buffer" refers to a buffer storing a copy of an
overlay image. Ex. 1007, 9:33–37.

as such, Gough fails to disclose performing blending using logical operators. PO Resp. 34 (citing Ex. 2008 ¶¶ 88–89).

The only mention of "logical operators" in the Petition occurs in Petitioner's claim chart. Pet. 20. This section of the claim chart lists several portions of Gough with respect to the claim 1 language "further wherein the variable-pixel control includes logical operators to provide different blending/merging effects such that," but does not identify specifically which portion or portions allegedly disclose the "logical operators." *Id.* at 19–20 (citing Ex. 1007, 6:51–58, 9:66–10:19, 10:23–41; 14:5–19, Figs. 10, 10a– 10f; Ex. 1015, 43–46).

In its Reply, Petitioner argues that a "first Gough blending engine . . . discloses bitwise OR operations to one of ordinary skill in the art, as well as other logical operations such as Source Copy operations." Pet. Reply 15 (citing Ex. 1007, 10:23–41; Ex. 1001, 5:1–19; Ex. 1020 ¶¶ 50, 54). Petitioner adds that "[a] person of skill in the art, when presented with Figs. 10a-f [of Gough] would understand the blending to be performed with multiple logical operators." *Id.* at 15–16 (citing Ex. 1007, 14:10–16; Pet. 19–20; Ex. 2015, 44–46; Ex. 1020 ¶ 50). Petitioner further argues that "Gough's alternate blending engine embodiment" discloses a color look-up table, and one of ordinary skill in the art would understand that using this look-up table includes logical operations. *Id.* at 16–17 (citing Ex. 1007, 14:9–19; Pet. 19–20; Ex. 2015, 46; Ex. 1020 ¶¶ 47–49).

We agree with Patent Owner. Petitioner does not explain adequately where the detailed analysis set forth in the Reply is made in the Petition, and, in any event, we do not find the arguments persuasive. "A patent claim is anticipated if a single prior art reference expressly or inherently discloses

every limitation of the claim." *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1252 (Fed. Cir. 2014). Here, Petitioner does not describe sufficiently how Gough expressly discloses using logical operators to accomplish the blending process.[6] We do not agree that either Gough's description of the blending process depicted in Figures 10a–10f (Ex. 1007, 10:23–41) or Gough's description of using the color look-up table (*id.* at 14:9–19) expressly discloses using logical operators, and such express disclosure is required for anticipation. At best, Petitioner's arguments suggest how Gough *could* be envisioned as using logical operators, but do not explain adequately where or how Gough expressly discloses using logical operators to carry out the blending process.

For these reasons, we are not persuaded that Petitioner has shown, by a preponderance of the evidence, that independent claim 1, and claims 2, 3, 5, 7–10, and 12–14 depending therefrom, are anticipated by Gough.

 3.   *Claims 19–22, 24, and 26–30*

Petitioner argues that Gough anticipates independent claims 19 and 26 for reasons similar to those asserted in connection with independent claim 1. Pet. 23–27. Petitioner argues that Gough discloses the subject matter of dependent claims 20–22, 24, and 27–30. *Id.* at 25–28.

Patent Owner argues that Gough does not disclose the claim 19 limitation of "causing pixels selected to form the representation of at least one key to be activated simultaneously with pixels selected to form the main image" and the claim 26 limitation that "pixels selected to form the representation of at least one input zone are activated simultaneously with

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[6] Petitioner does not assert that Gough inherently discloses logical operators. Tr. 33.

pixels selected to form the main image." PO Resp. 25. To support this contention, Patent Owner argues that "the '960 patent describes an example in which a composite image is generated by using 25% of the pixels to represent a key and 75% of the pixels to represent the main image." *Id.* at 25–26 (citing Ex. 1001, 5:41–44, 5:56–6:26). Patent Owner asserts that this example would result in the following composite image in which each "K" represents a pixel selected for forming the representation of the key and each "M" represents a pixel selected for forming the main image:

K	M	M	M	K	M	M	M
K	M	M	M	K	M	M	M
K	M	M	M	K	M	M	M
K	M	M	M	K	M	M	M

Id. at 27. Patent Owner further argues that "[t]he '960 patent also discloses an example combines the main image and the key such that each pixel of the composite image receives a contribution from both the main image and the key." *Id.* (citing Ex. 1001, 5:47–49, 6:26–38). Patent Owner asserts that this example would result in the following composite image in which each "km" represents a pixel having contributions from the key image and the main image:

km	km	km	km	km	km	km	km
km	km	km	km	km	km	km	km
km	km	km	km	km	km	km	km
km	km	km	km	km	km	km	km

Id. at 28.

Patent Owner then argues that one of ordinary skill in the art would understand that the '960 patent contemplates generating the following image:

km	*km*	*km*	*km*	*km*	*km*	*km*	*km*
K	M	M	M	K	M	M	M
km	*km*	*km*	*km*	*km*	*km*	*km*	*km*
K	M	M	M	K	M	M	M

Id. at 28–29 (citing Ex. 2008 ¶ 75). Relying on this analysis, Patent Owner argues that Gough doesn't disclose the "selected" limitations of claims 19 and 26 because Gough describes "forming a resulting blended image in which pixels have contributions from **both** pixels of the base image and pixels of the overlay image." *Id.* at 30 (citing Ex. 2008 ¶ 77). In other words, Patent Owner argues, Gough does not disclose both (i) unblended pixels that are just "K" or "M" and (ii) blended pixels that are "km." Tr. 46:3–25.

Petitioner argues that "Patent Owner's proposed interpretation – that the independent claims require *both* pixels dedicated solely to each of the images *and* blended pixels – is unsupported in the specification." Pet. Reply 5. Petitioner also argues that Patent Owner's proposed interpretation of independent claims 1, 19 and 26 cannot be reconciled with some of the dependent claims, such as claim 10, which recites that "each pixel of the touch-activated input device is contributed 100% by either the pixels of the main image or the pixels of the representation of the at least one key to form the composite image." *Id.* at 5–6; Tr. 25:17–26:2. In addition, Petitioner

argues that "[n]othing in the claims or the specification requires, as Patent Owner appears to argue, that 'activated simultaneously' requires pixels that are dedicated 100% to either the main or overlay image." Pet. Reply 6 (citing Ex. 1020 ¶¶ 35–36).

We agree with Petitioner's arguments. Patent Owner does not establish adequately that claims 19 and 26 require both unblended and blended pixels simultaneously.

Furthermore, we are persuaded and, thus, find that Gough *does* disclose displaying a composite image using both unblended and blended pixels. As discussed above, Gough's blending process involves blending data from blendable units representing a base or main image with data from blendable units representing an overlay keyboard image, so that the base image can be seen through the translucent keyboard image. Ex. 1007, 10:5–10, 24–41. Each blendable unit comprises 1–32 pixels. *Id.* at 10:1–3. Referring to Figure 10c, for example, it is seen that the left-most blendable unit of the composite image contributes to the overlay keyboard image only, the two middle blendable units are empty, and the right-most blendable unit contributes to both the overlay keyboard image and the main image. Thus, considering that each blendable unit can be a single pixel, the left-most blendable unit is an unblended or "K" pixel, while the right-most blendable unit is a blended or "km" pixel.

In addition, Patent Owner argues that Gough does not disclose the "variable-pixel control" recited in claim 19. PO Resp. 31. Patent Owner supports this argument by stating:

> [a]s explained above, the blending process disclosed in Gough in connection with the two embodiments relied on by the Petitioner, produces a resulting blended image in

> which pixels have contributions from pixels of **both** the
> base image and the overlay image. This does not meet the
> 'selected' limitations of claims 1 and 19.

Id. at 32 (citing Ex. 2008 ¶ 84). Patent Owner's argument is not persuasive because it relies on the same argument based on the "selected" limitations that we found unpersuasive for the reasons discussed above. Instead, we are persuaded by Petitioner's assertion that Gough discloses variable-pixel control. *See* Pet. 16 (citing Ex. 1007, 6:51–58; 8:67–9:6; 10:23–41).

After considering Petitioner's and Patent Owner's positions, as well as the supporting evidence, we determine that Petitioner has shown, by a preponderance of the evidence, that claims 19–22, 24, and 26–30 are anticipated by Gough.

4.   Claim 25

Claim 25, which depends indirectly from independent claim 19, recites "controlling the lightness/darkness of the blended shadow by controlling the blending of pixels of the at least one key representation and the main image." Ex. 1001, 14:26–29. Petitioner argues that "Gough . . . discloses that the brightness of the overlaid image relative to the underlying image, and thus the contrast, can be varied within the '[ ]variable pixel control' blending engine, by tapping on the disclosed 'translucency button.'" Pet. 16 (citing Ex. 1007, 6:51–58.).

Patent Owner argues that Petitioner's assertion is erroneous because "the Petition relies on an incorrect claim construction of the term 'blended shadow.'" PO Resp. 38–39. We disagree. For the reasons discussed above (*see supra* Section II.A.5), we determine that Patent Owner's proposed construction of "blended shadow" is incorrect, and we adopt Petitioner's proposed construction. Accordingly, on the full record before us, we

determine that Petitioner has shown, by a preponderance of the evidence, that claim 25 is anticipated by Gough.

C.   *Asserted Obviousness over Buxton, Bier, and Harrison*

Petitioner challenges claims 1–3, 5, 7–10, 12–14, 19–22, and 24–30 as unpatentable over Buxton, Bier, and Harrison under 35 U.S.C. § 103(a). Pet. 3, 42–59.

1.   *Overview of Buxton*

Buxton "relates to graphical user interfaces [(GUIs)] providing variably-transparent (transparent/semitransparent) layered objects and optimizing the degree of transparency for maximum user and system performance." Ex. 1009, 1:18–21. Buxton's variably-transparent GUI merges images on a graphical display so that "'see through' objects (such as menus, tool palettes, windows, dialogue boxes, or screens) are superimposed over similar objects or different background content (such as text, wireframe or line art images, or solid images)." *Id.* at 3:40–46. User derived values are used to determine required transparency levels, and "[b]y knowing in advance which transparency levels produce the optimal user performance, GUIs . . . can be specifically tailored and optimized." *Id.* at 3:54–60.

Buxton discloses that the variably-transparent GUI can operate in hardware/software environment 1200, which includes hardware unit 1204 and software unit 1206. *Id.* at 14:17–21, Fig. 12. Hardware unit 1204 includes central processing unit (CPU) 1208, random access memory (RAM) 1210, and input/output (I/O) interface 1212, and is operably connected to pointer device 1214 (e.g., a mouse or puck) and graphics terminal 1218, among other devices. *Id.* at 14:22–24, 36–40, Fig. 12. Environment 1200 contains a number of application programs layered over

software unit 1206, including application program 1228, which "outputs a series of graphic commands to facilitate the images/representations (i.e., detailed geometric descriptions and attributes) of objects/data displayed on graphics terminal **1218**." *Id.* at 14:58–15:2. Buxton discloses two techniques for merging or blending foreground and background images into a combined image that is displayed. *See generally id.* at 16:1–17:33. One such technique utilizes an alpha blending algorithm "to compute resulting pixels based on the combined red (R), green (G), blue (B), and α values for both the foreground and background image pixels." *Id.* at 17:17–20.

2. *Overview of Bier*

Bier discloses user interfaces for allowing users to interact with processor-controlled machines. Ex. 3001, 1:29–32. The invention can be implemented on computer system 10, which includes processor 12, display device 22, and a number of input devices. *Id.* at 7:18–25, Fig. 1. "The input devices are for the most part standard, including a keyboard 25 and one or more pointing devices. A mouse 27 and a trackball 30 are shown, but other devices such as touch screens, graphics tablets, or electronic styluses could be used." *Id.* at 7:41–45, Fig. 1. Another aspect of the invention is to display a movable transparent overlay having delineated regions 60 on display device 22. *Id.* at 8:5–8, Fig. 1; *see also id.* at 5:54–57 ("groups of tools will move together under the user's control, and so [the groups] can be thought of as being located on a transparent overlay that can be moved relative to the visible representation"). Bier also discloses positioning a numeric keypad "near the area where a user is working and activated with a pen or cursor, making a keyboard unnecessary for some operations." *Id.* at 20:58–61, Fig. 27.

3. *Harrison*

Petitioner also argues Harrison teaches certain limitations. Pet. 44, 48, 52–55. Petitioner does not explain what Harrison adds to what is taught by Buxton. *See id.* at 48 ("[t]o the extent that these features may not be fully disclosed in Buxton, they are clearly disclosed in Harrison"). For purposes of this Final Written Decision, we determine the teachings of Harrison are cumulative to the teachings of Buxton, and therefore, do not address Harrison further.[7]

4. *Claims 1–3, 5, 7–10, and 12–14*

Petitioner argues that "Buxton discloses nearly all of the elements and limitations" of the challenged claims. Pet. 42. With respect to claim 1, Petitioner argues that Buxton discloses using alpha blending in accordance with the equation $I = \alpha I_1 + (1-\alpha)I_2$, where I is the resulting color intensity, I_1 is the color intensity of the foreground image pixel, I_2 is the color intensity of the background image pixel, and α is the specified transparency level between 0 and 1. *Id.* at 43–44 (citing Ex. 1009, 17:17–28). Petitioner argues that Buxton's alpha blending "permits pixels to be 'dedicated simultaneously' to both images in order to produce a composite image" and is an "example of an operation using logical operators to provide different blending effects." *Id.* at 44 (citing Ex. 1009, 16:63–17:4). Petitioner contends that although "Buxton may lack explicit disclosure of . . . a touch-activated device (required in claims 1 and 26)," Bier discloses that a touch screen is interchangeable with a mouse. *Id.* at 44–45. Petitioner also contends that Bier discloses a keyboard superimposed over a display. *Id.* at

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[7] Because the asserted ground includes Harrison, we continue to include it as part of our overall analysis.

45, 50. Petitioner asserts it would have been obvious "to substitute the touchscreen of Bier for the mouse of Buxton as an input device" to make Buxton's device more user-friendly. *Id.* at 45–46.

Patent Owner argues that Buxton does not disclose logical operators for providing different blending/merging effects because the disclosed alpha blending equation "describes operations that are ***solely*** arithmetic, rather than logical." PO Resp. 45 (citing Ex. 2008 ¶ 106). Patent Owner further argues that "Buxton's alpha blending equation does not include any logical operators and does not involve performing any logical operations." *Id.* (citing Ex. 2008 ¶ 106).

In its Reply, Petitioner argues that Buxton's alpha blending equation uses logical operators to provide different merging effects because "[a]s was well known in the art, any equation involving multiplication, addition, or subtraction (as well as division) are logical operations, in a computer." Pet. Reply 19–20 (citing Ex. 1020 ¶ 59). Petitioner also argues that when α is equal to 1, "the alpha blending equation collapses to $I = I_1$," thereby making the equation a "Source copy" Boolean operation disclosed in the '960 patent. *Id.* at 20–21 (citing Ex. 1020 ¶ 61; Ex. 1001, 5:16).

After considering all evidence and arguments, we agree with Patent Owner. In particular, we determine that Petitioner's arguments do not persuade us that Buxton's alpha blending equation uses operators that manipulate binary values at the bit level, consistent with our construction of "logical operators." The alpha blending equation unquestionably involves arithmetic operations, which we find differ from logical operations. Furthermore, Petitioner has not shown persuasively whether any logical operations overlap with any arithmetic operations. Therefore, we agree with

Patent Owner's contention that Buxton's alpha blending equation does not use logical operators.

Petitioner also argues that Patent Owner's argument that Buxton's alpha blending equation does not include logical operators is inconsistent with its position taken in the underlying litigation that claim 1 covers alpha blending. *Id.* at 21 (citing Ex. 1024, 32, 34–39, 56). In addition, Petitioner argues that one of the named inventors of the '960 patent testified "that a form of alpha-blending is in fact what is disclosed in the sections of the '960 Patent that use logical operators to perform blending." *Id.* at 21–22 (citing Ex. 1025, 35:17–36:13, 57:24–58:5, 61:22–63:23, 66:25–69:25.)

Petitioner's judicial estoppel argument is not persuasive, however, because Patent Owner has not succeeded on its infringement claim in the district court. *See New Hampshire v. Maine*, 532 U.S. 742, 750–51 (2001) ("Absent success in a prior proceeding, a party's later inconsistent position introduces 'no risk of inconsistent court determinations,' and thus poses little threat to judicial integrity.") (citation omitted). Furthermore, as set forth above, we find that, factually, arithmetic operations are not the same as logical operations.

For these reasons, we are not persuaded that Petitioner has shown, by a preponderance of the evidence, that independent claim 1, and claims 2, 3, 5, 7–10, and 12–14 depending therefrom, are rendered unpatentable by the combination of Buxton, Bier, and Harrison.

5.   *Claims 19, 20, 22, and 24–30*

Petitioner argues that independent claims 19 and 26 are unpatentable over the combination of Buxton, Bier, and Harrison for reasons similar to

those asserted in connection with independent claim 1. Pet. 43–47, 55–56, 57–58.

Patent Owner argues that the "[a]lpha blending process described in Buxton does not select pixels in the resulting blended image for the representation of the foreground image and does not select pixels of the resulting blended image for the representation of the background image;" instead, "it generates a resulting blended image in which pixels have contributions from **both** the foreground image pixels and background image pixels." PO Resp. 51–52 (citing Ex. 2008 ¶ 112).

Petitioner disagrees, arguing that when "the alpha channel is set either to "1" or "0," [Buxton's alpha blending] equation results in the selection that Patent Owner alleges the claims require." Pet Reply 23. In other words, Petitioner asserts that "[a]t alpha = 1, the equation selects only overlay image pixels," and "at alpha = 0, the equation selects only the main image pixels," such that "[i]t is only between these values that the equation results in a blended image." *Id.* (citing Ex. 1020 ¶ 64).

We agree with Petitioner that Buxton's alpha blending equation can produce unblended pixels. Furthermore, as discussed above, we do not agree with Patent Owner's position that claims 19 and 26 require both unblended and blended pixels. *See supra* Section II.B.3.

In addition, Patent Owner argues that Gough does not disclose the "variable-pixel control" recited in claim 19. PO Resp. 52. Patent Owner supports this argument by asserting that "[f]or the above reasons, the Petition has failed to establish that the Buxton combination discloses the 'selected' limitations of claims 1 and 19." *Id.* at 53 (citing Ex. 2008 ¶ 117). Patent Owner's argument is not persuasive because it relies on the same

argument based on the "selected" limitations that we found unpersuasive for the reasons discussed above.

After considering Petitioner's and Patent Owner's positions, as well as the supporting evidence, we determine that Petitioner has shown, by a preponderance of the evidence, that claims 19, 20, 22, and 24–30 are unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Buxton, Bier, and Harrison.

6.   *Claim 21*

Claim 21, which depends indirectly from independent claim 19, recites "said merging includes using a bit-block-type transfer operation." Ex. 1001, 14:1–2. Petitioner argues that Buxton discloses the subject matter of claim 21. Pet. 53, 57 (citing Ex. 1009, 16:11–17, 16:63–17:4, 17:17–28; Ex. 1015, 165–167).

Patent Owner argues that the Petition erroneously contends that the Buxton combination discloses using a bit-block-type transfer operation because "[t]he Petition applies incorrect construction of the term 'bit-block-type transfer operation.'" PO Resp. 55. Patent Owner argues further that "[t]he Petition has not demonstrated that Buxton in combination with Bier and/or Harrison discloses 'bit-block-type transfer operation' under the Board's construction." *Id.* at 56.

In its Reply, Petitioner argues that "Buxton discloses 'using a bit-block-type transfer operation' even under the Board's construction of the term," and the XOR operation disclosed in Buxton a programming technique that transfers or moves blocks of bits from one area of memory to another. Pet. Reply 24–25 (citing Ex. 1015, 165–167; Ex. 1020 ¶ 63).

We are not persuaded by Petitioner's argument. Although a section of Petitioner's claim chart addressing the "using a bit-block-type transfer operation" claim language refers to the portion of Buxton describing discrete algorithms and an XOR operation (Pet. 53 (citing Ex. 1009, 16:11–17)), the Petition does not explain sufficiently that the XOR operation of Buxton is relied on as disclosing a programming technique that transfers or moves blocks of bits from one area of memory to another. Petitioner's arguments in its Reply do not rectify this deficiency in the Petition.

Accordingly, we are not persuaded that Petitioner has shown, by a preponderance of the evidence, that claim 21 is rendered unpatentable by the combination of Buxton, Bier, and Harrison.

D.   *Motions to Exclude*

Patent Owner moves to exclude Exhibits 1024 and 1025. Paper 31, 1. Petitioner moves to exclude Exhibits 2001, 2002, and 2011–2020. Paper 34, 1. We do not rely on any of these exhibits in rendering our decision. We therefore dismiss both motions to exclude as moot.

III. CONCLUSION

Petitioner has shown, by a preponderance of the evidence, that claims 19–22 and 24–30 of the '960 patent are unpatentable under 35 U.S.C. § 102(e) as anticipated by Gough. Petitioner has not shown, by a preponderance of the evidence, that claims 1–3, 5, 7–10, and 12–14 of the '960 patent are unpatentable under 35 U.S.C. § 102(e) as anticipated by Gough.

Petitioner has shown, by a preponderance of the evidence, that claims 19, 20, 22, and 24–30 of the '960 patent are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Buxton, Bier, and Harrison.

Petitioner has not shown, by a preponderance of the evidence, that claims 1–3, 5, 7–10, 12–14, and 21 of the '960 patent are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Buxton, Bier, and Harrison.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 19–22 and 24–30 of the '960 patent are determined to be *unpatentable*;

FURTHER ORDERED that claims 1–3, 5, 7–10, and 12–14 of the '960 patent are determined to be *patentable*;

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

FURTHER ORDERED that Petitioner's Motion to Exclude is *dismissed*; and

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

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