

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

ZIILABS INC., LTD.,
Patent Owner.

Case IPR2015-00963
Patent 6,977,649 B1

Before MICHAEL R. ZECHER, TREVOR M. JEFFERSON, and
MICHAEL J. FITZPATRICK, *Administrative Patent Judges*.

ZECHER, *Administrative Patent Judge*.

DECISION

Denying Institution of *Inter Partes* Review
35 U.S.C. § 314(a) and 37 C.F.R. § 42.108

I. INTRODUCTION

Petitioner, Apple Incorporated (“Apple”), filed a Petition requesting an *inter partes* review of claims 21, 25, and 33 of U.S. Patent No. 6,977,649 B1 (“the ’649 patent,” Ex. 1001). Paper 1 (“Pet.”). Patent Owner, ZiiLabs Incorporated, Limited (“ZiiLabs”), timely filed a Preliminary Response. Paper 7 (“Prelim. Resp.”).

We have jurisdiction under 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted unless the information presented in the Petition shows “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” Taking into account the arguments presented in ZiiLabs’ Preliminary Response, we conclude that the information presented in the Petition does not establish that there is a reasonable likelihood that Apple will prevail in challenging claims 21, 25, and 33 of the ’649 patent as unpatentable under 35 U.S.C. §§ 102(e) and 103(a). We, therefore, deny the Petition.

A. *Related Matter*

The ’649 patent has been asserted in a co-pending district court case titled *ZiiLabs Inc., Ltd. v. Samsung Elec. Co., Ltd.*, No. 2:14-cv-00203-JGR-RSP (E.D. Tex.). Pet. 1–2 (citing Exs. 1011, 1012); Paper 4, 1.

B. *The ’649 Patent*

The ’649 patent, titled “3D Graphics Rendering with Selective Read Suspend,” issued December 20, 2005, from U.S. Patent Application No. 09/280,250, filed on March 29, 1999. Ex. 1001, at [54], [45], [21], [22]. The ’649 patent claims priority to U.S. Provisional Application No. 60/109,733, filed November 23, 1998. *Id.* at [60].

The '649 patent generally relates to computer graphics and, in particular, to memory read and write commands between primitives. Ex. 1001, 1:14–16. According to the '649 patent, if a display is unchanging, no demand is placed on the rendering operations. *Id.* at 1:64–65. Some common operations, e.g., zooming and rotation, however, require every object in the image space to be re-rendered. *Id.* at 1:66–2:1. Slow rendering will make the rotation and zoom appear jerky, which creates an effect that is undesirable. *Id.* at 2:1–3.

The '649 patent further discloses that, in prior art graphics systems, a read-modify-write operation is relied on when rendering primitives. Ex. 1001, 2:38–39. In a heavily pipelined system, the individual functions of this read-modify-write operation may experience wide separations in time. *Id.* at 2:42–44. One solution to this problem is to force all outstanding writes to complete before any reads for the new primitive begin. *Id.* at 2:53–55. Implementation of this solution is generally through a message passing mechanism that includes suspend and resume commands. *See id.* at 2:55–3:11. There are, however, significant time delays between these commands reaching the memory controller and being acted upon. *Id.* at 3:13–15. Such delays present a bottleneck that must be overcome to increase the rendering rate. *Id.* at 3:15–16, 3:22–25.

The '649 patent purportedly solves these problems by disclosing a method and system for increasing the rendering efficiency in pipelined graphics systems. Ex. 1001, Abstract, 3:28–30. In one embodiment, a record is kept of destination pixels. *Id.* at 8:36–38. Read units may record the pixels that have been read and remove them from the record when an update has occurred or the pixel has been discarded, i.e., no update has

occurred. *Id.* at 8:38–41. When a destination pixel is read, the record kept by the read units is checked to determine whether the pixel is present, which indicates that the pixel is either waiting for an update or has yet to be discarded. *Id.* at 8:41–44. If the pixel is present in the record, the read is delayed or suspended until the pixel has been removed from the record. *Id.* at 8:44–46. Once the pixel has been removed, the read may resume. *Id.* at 8:46–47. If the pixel is not in the record, then the read issues immediately. *Id.* at 8:47–48. Once the read issues, the record is updated to reflect the new destination pixel. *Id.* at 8:48–50.

C. Challenged Claims

Challenged claims 21, 25, and 33 are all independent. Independent claims 21 and 25 are each directed to a method of computer graphics memory management, whereas independent claim 33 is directed to a pipelined graphics system. Independent claims 21, 25, and 33 are reproduced below:

21. A method of computer graphics memory management, comprising the actions of:
- keeping a record of each pixel affected by a rendered primitive;
 - removing a pixel from said record if said pixel information is updated or discarded; and
 - suspending reads of pixel information if a primitive to be rendered will affect a pixel whose entry remains in said record.

Ex. 1001, 17:48–56.

25. A method of computer graphics memory management, comprising the actions of:
- tracking each primitive to be rendered and the pixel information each said primitive will affect; and

suspending reads of pixel information between rendering of each said primitive only if the primitive to be rendered will affect pixel information that has been previously rendered and has not had sufficient time to update.

Id. at 18:1–9.

33. A pipelined graphics system, comprising:
display hardware; and

video rendering hardware comprising, a read unit to read information regarding a primitive to be rendered to be displayed by said display hardware, a write unit to update modified information regarding primitives, and a read monitor unit to prevent primitive information which has been modified from being read by said read unit before said write unit has updated said information;

wherein said read monitor unit tracks pixel information affected by previously rendered primitives and suspends reads if a primitive to be rendered will affect pixel information which has been affected by a previously rendered primitive until said pixel information has had time to update.

Id. at 18:44–59.

D. Prior Art Relied Upon

Apple relies upon the following prior art references:

Becker	US 5,379,379	Jan. 3, 1995	Ex. 1007
Kenworthy	US 5,808,617	Sept. 15, 1998	Ex. 1006
McCormack	US 5,870,109	Feb. 9, 1999	Ex. 1010
		(filed June 6, 1997)	

E. Asserted Grounds of Unpatentability

Apple challenges claims 21, 25, and 33 of the '649 patent based on the asserted grounds of unpatentability ("grounds") set forth in the table below. Pet. 3, 26–60.

Reference(s)	Basis	Challenged Claim(s)
McCormack	§ 102(e)	21
McCormack and Becker	§ 103(a)	21
McCormack and Kenworthy	§ 103(a)	25 and 33 ¹
McCormack, Kenworthy, and Becker	§ 103(a)	25 and 33

II. ANALYSIS

A. Claim Construction

In an *inter partes* review, we construe claims by applying the broadest reasonable interpretation in light of the specification. 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1278–79 (Fed. Cir. July 8, 2015), *reh'g en banc denied*, 793 F.3d 1297 (Fed. Cir. July 8, 2015). Under the broadest reasonable interpretation standard, and absent any special definitions, claim terms or phrases are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the

¹ Although Apple omits independent claim 25 in the statement of this asserted ground (Pet. 3), Apple nonetheless includes this claim in the corresponding analysis (*id.* at 36–47). We will treat the incorrect statement of this asserted ground as a typographical error and presume Apple intended to assert that both claims 25 and 33 are unpatentable under § 103(a) over the combination of McCormack and Kenworthy. *Accord* Prelim. Resp. 1 (confirming Apple asserts that both claims 25 and 33 are unpatentable under § 103(a) over the combination of McCormack and Kenworthy).

art, in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

In its Petition, Apple proposes constructions for the following claim terms or phrases: (1) “primitive” (all challenged claims); and (2) “tracking each primitive to be rendered and the pixel information each said primitive will effect” (claim 25). Pet. 10–14. In response, ZiiLabs contends that an explicit construction of these claim terms or phrases is not necessary. Prelim. Resp. 10–12. ZiiLabs then indicates that, for purposes of this Decision, it accepts Apple’s proposed constructions of the aforementioned claim terms or phrases, but in the event we institute an *inter partes* review as to the challenged claims, it intends to present arguments and evidence regarding each construction. *Id.* We, however, need not assess Apple’s proposed constructions because they are not necessary to resolve the dispositive issues discussed below. *See, e.g., Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (only those terms or phrases that are in controversy need to be construed, and only to the extent necessary to resolve the controversy).

B. Anticipation by McCormack

Apple contends that independent claim 21 is anticipated under § 102(e) by McCormack. Pet. 26–31. Apple explains how McCormack purportedly describes the subject matter of this challenged claim (*id.*), and relies upon the Declaration of Dr. John Owens (Ex. 1003) to support its positions. We have reviewed Apple’s explanations and supporting evidence, but we are not persuaded that McCormack properly accounts for “suspending reads of pixel information if a primitive to be rendered will

affect a pixel whose entry remains in said record,” as recited in independent claim 21.

We begin our analysis with the principles of law that generally apply to a ground based on anticipation, followed by a brief discussion of McCormack, and then we turn to the parties’ contentions with respect to independent claim 21.

1. Principles of Law

To establish anticipation, “all of the elements and limitations of the claim must be shown in a single prior reference, arranged as in the claim.” *Karsten Mfg. Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1383 (Fed. Cir. 2001). “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631 (Fed. Cir. 1987). We analyze this asserted ground based on anticipation with the principles stated above in mind.

2. McCormack

McCormack generally relates to digital graphic systems and, in particular, to the detection of overlapping pixels in reading and writing digital data. Ex. 1010, 1:6–8. Figure 1 of McCormack, reproduced below, illustrates a block diagram of a portion of a digital graphics system. *Id.* at 4:15–16.

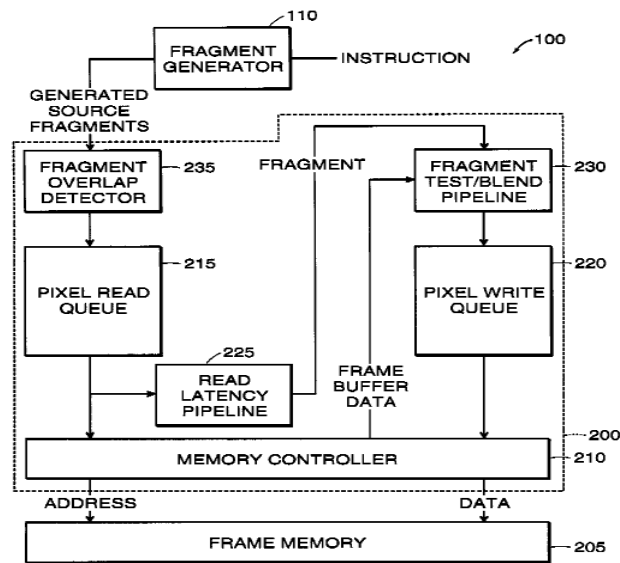


FIG. 1

As shown in Figure 1, graphic system 100 includes fragment generator 110 that provides fragments to graphic controller 200. Ex. 1010, 4:30–32. Graphic controller 200 includes, among other things, memory controller 210, pixel read queue 215, read latency pipeline 225, fragment test/blend pipeline 230, and pixel write queue 220. *Id.* at 4:32–5:2. According to McCormack, fragment overlap detector 235 detects overlapping fragments associated with the objects forming a graphic image. *Id.* at 5:2–6. Fragment overlap detector 235 preferably includes an M-entry content-addressable memory (“CAM”). *Id.* at 5:64–65.

McCormack discloses that, from time-to-time, the CAM will fill completely during operation of graphic system 100. Ex. 1010, 7:34–36. When the CAM has filled completely, it is cleared, thereby making it responsive to receipt of the next fragment. *Id.* at 7:36–38. Thereafter, the current fragment N-bit address and four-bit byte mask data are stored in the CAM, and fragment overlap detector 235 tags the fragment before forwarding it to pixel read queue 215. *Id.* at 7:38–41.

McCormack further discloses that, if fragment overlap detector 235 determines that the pixel data currently being requested by the most recently received fragment is both an address that matches an address of a previously received fragment, and that is stored in the CAM, fragment overlap detector 235 clears the CAM of the previously stored address. Ex. 1010, 9:30–36. Thereafter, fragment overlap detector 235 stores the address detected in the most recently received fragment in the CAM, and then tags the most recently received fragment prior to forwarding that fragment to the end of pixel read queue 215. *Id.* at 9:36–40.

3. *Claim 21*

Independent claim 21 recites, in relevant part, “suspending reads of pixel information if a primitive to be rendered will affect a pixel whose entry remains in said record.” Ex. 1001, 17:54–56.

With respect to the claimed “suspending” step, Apple contends that McCormack’s fragment overlap detector 235 records the address of pixel data read from memory to render a primitive. Pet. 30 (citing Ex. 1003 ¶¶ 103–09, 156, 181). In particular, Apple argues that fragment overlap detector 235 compares the address of newly read pixel data to the addresses already stored in the CAM of fragment overlap detector 235. *Id.* (citing Ex. 1010, 8:23–30, 8:44–49; Ex. 1003 ¶¶ 103–09, 156, 181). Apple further argues that, when McCormack’s fragment overlap detector 235 identifies an overlap between these addresses, it tags the overlapping fragment request, and prior to reading the fragment request, memory controller 210 delays or stalls until the pixel data at all the previous non-overlapping addresses are rewritten from pixel write queue 220 to frame memory 205. *Id.* (citing Ex. 1010, 9:3–19; Ex. 1003 ¶¶ 109, 131). In summary, Apple asserts that

McCormack describes the “suspending” step because it suspends the reading of new pixel data when this data overlaps with the address of a previously rendered pixel remaining in the CAM. *Id.* at 30–31 (citing Ex. 1003 ¶¶ 180–82).

In response, ZiiLabs contends that Apple’s position regarding the claimed “suspending” step is predicated on the notion that the CAM associated with McCormack’s fragment overlap detector 235 constitutes the claimed “record.” Prelim. Resp. 20. ZiiLabs argues, however, that McCormack’s CAM is flushed completely whenever an entry is removed from the CAM such that no entries remain. *Id.* at 20–21 (citing Ex. 1010, 7:34–38). As such, ZiiLabs asserts that McCormack does not describe selective removal of pixel data entries from the CAM such that one or more entries remain therein. *Id.* at 23; *see also id.* 24–25 (arguing that when a pixel data entry is removed from McCormack’s CAM, all entries are removed). ZiiLabs also argues that the testimony of Apple’s expert witness, Dr. Owens, should be entitled to little, if any, weight because Dr. Baker does not explain adequately how McCormack’s disclosure of delaying or stalling relates to a pixel data entry that remains in the CAM. *Id.* at 22–23 (citing Ex. 1003 ¶ 181).

We are persuaded by ZiiLabs’ arguments for at least two reasons. First, we recognize that McCormack discloses that memory controller 210 delays or stalls reading pixel data associated with a fragment request that fragment overlap detector 235 identifies as being overlapping until the pixel data at all the previous non-overlapping addresses are rewritten from pixel write queue 220 to frame memory 205. Ex. 1010, 9:3–19. Nonetheless, McCormack also discloses that, when a pixel data entry associated with a

fragment request is removed from the CAM, all such entries are removed. *See* Ex. 1010, 3:64–4:1 (“the address memory is cleared of the detected first address, as well as all other addresses stored in the detector, responsive to the detector detecting a request to read overlapping pixel data associated with the second address”), 9:35–36 (“fragment overlap detector 235 will clear the CAM of the previously stored address, then store the address detected in the most recently received fragment of the CAM”). Given that McCormack’s CAM is cleared completely whenever an entry is removed from the CAM, it is not apparent to us how its disclosure of memory controller 210 delaying or stalling further reads is triggered by a pixel data entry that remains in the CAM because it has not been updated or discarded.

Second, we accord Dr. Owens’ testimony regarding the claimed “suspending” step little weight. Dr. Owens’ testimony in this regard is essentially the same as the contentions Apple offers in its Petition, which we have considered above and found unpersuasive. *Compare* Pet. 30–31, with Ex. 1003 ¶ 181. Dr. Owens does not attempt to reconcile the deficiency we identified in McCormack—namely, how McCormack’s disclosure of memory controller 210 delaying or stalling further reads is triggered by a pixel data entry that remains in the CAM because it has not been updated or discarded, especially given the fact that the CAM is cleared completely whenever an entry is removed from the CAM. *See* Ex. 1010, 3:54–4:1, 9:35–36. Absent a cogent explanation from Dr. Owens, we are not persuaded that Apple has presented sufficient evidence to support a finding that McCormack describes the “suspending” step, as recited in independent claim 21.

Based on the record before us, Apple has not demonstrated a reasonable likelihood that it will prevail on its assertion that independent claim 21 is anticipated by McCormack.

C. Obviousness Over the Combination of McCormack and Becker

Apple also contends that independent claim 21 is unpatentable under § 103(a) over the combination of McCormack and Becker. Pet. 31–35. In this asserted ground based on obviousness, Apple does not apply the teachings of Becker in such a way that remedies the deficiency in McCormack discussed above. *See generally id.* Therefore, for the same reasons discussed above, Apple has not demonstrated a reasonable likelihood that it will prevail on its assertion that independent claim 21 would have been obvious over the combination of McCormack and Becker.

D. Obviousness Over the Combination of McCormack and Kenworthy

Apple contends that claims 25 and 33 are unpatentable under § 103(a) over the combination of McCormack and Kenworthy. Pet. 36–47, 51–57. Apple explains how this proffered combination purportedly teaches the subject matter of these challenged claims (*id.*), and relies upon the Declaration of Dr. Owens (Ex. 1003) to support its positions. We have reviewed Apple’s explanations and supporting evidence, but we are not persuaded that the combination of McCormack and Kenworthy properly accounts for the “suspending” step, as recited in independent claim 21, and the “read monitor unit tracks pixel information affected by previously rendered primitives . . . until said pixel information has had time to update,” as recited in independent claim 33.

We begin our analysis with the principles of law that generally apply to a ground based on obviousness, followed by a brief discussion of

Kenworthy, and then we turn to the parties' contentions with respect to independent claims 25 and 33.

1. Principles of Law

A claim is unpatentable under § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). We also recognize that prior art references must be “considered together with the knowledge of one of ordinary skill in the pertinent art.” *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994) (citing *In re Samour*, 571 F.2d 559, 562 (CCPA 1978)). We analyze this asserted ground based on obviousness with the principles identified above in mind.

2. Kenworthy

Kenworthy generally relates to graphics rendering and, in particular, to a method and system for reducing pixel processing and storage in a graphics rendering system. Ex. 1006, 1:14–16. According to Kenworthy, a scene, or portions of a scene, may be divided into pixel regions called chunks. *Id.* at 8:32–34. After dividing the geometry composing the scene into chunks, the geometry is pre-sorted into bins based on the chunk into which the geometry will be rendered. *Id.* at 8:35–39. This process is

referred to as chunking. *Id.* at 8:39. As the scene is animated, the data structure is modified to adjust for geometry that moves from one chunk to another. *Id.* at 8:41–43. In one embodiment, Kenworthy discloses serially rendering chunks using an image processor called a tiler. *See id.* at 4:51–67.

3. Claim 25

Independent claim 25 recites, in relevant part, “suspending reads of pixel information between rendering of each said primitive only if the primitive to be rendered will affect pixel information that has been previously rendered and has not had sufficient time to update.” Ex. 1001, 18:5–9.

With respect to the claimed “suspending” step, Apple first directs us to the supporting testimony of Dr. Owens that purportedly explains the scope and meaning of this disputed limitation. Pet. 44–45 (citing Ex. 1003 ¶¶ 203–06). Apple then focuses on the claim phrase “pixel information that has been previously rendered and has not had sufficient time to update,” before addressing the “suspending” step in its entirety. *Id.* at 45–47. In particular, Apple contends that McCormack describes fragment overlap detector 235 recording the addresses of pixels affected by each primitive. *Id.* at 45 (citing Ex. 1010, 8:7–16; Ex. 1003 ¶¶ 103–05, 156). Apple argues that McCormack’s fragment test/blend pipeline 230 then modifies the pixel information associated with a stored address before forwarding such pixel information to pixel write queue 220. *Id.* (citing Ex. 1010, 3:14–18, 8:22–23). Apple, therefore, asserts that the addresses stored in fragment overlap detector 235 represent “pixel information that has been previously rendered and has not had sufficient time to update,” as claimed. *Id.* (citing Ex. 1003 ¶ 207).

When addressing the “suspending” step in its entirety, Apple contends that McCormack discloses that pixel overlaps and suspends will not occur within a single primitive. Pet. 46 (citing Ex. 1010, 8:30–35; Ex. 1003 ¶ 181). Apple argues that, in order to address problems associated with read-modify-write conflicts, McCormack discloses suspending reads of pixel information between rendering of each primitive such that all reads and writes for one object are processed before reading any pixel data for another object. *Id.* (citing Ex. 1010, 1:63–64). Apple further argues that McCormack recognizes that, if not done selectively, this method results in significant system overhead and unacceptable delays. *Id.* (citing Ex. 1010, 2:4–5; Ex. 1003 ¶¶ 181, 209). Apple, therefore, asserts that McCormack teaches the “suspending” step, as claimed. *Id.* at 47 (citing Ex. 1003 ¶ 210).

We are not persuaded by Apple’s contentions because we are unable to discern how each of the cited disclosures in McCormack work in conjunction to account for all the features recited in the “suspending” step. *The Office Patent Trial Practice Guide* suggests that parties requesting *inter partes* review should “avoid submitting a repository of all the information that a judge could possibly consider, and instead focus on concise, well-organized, easy-to-follow arguments supported by readily identifiable evidence of record.” 77 Fed. Reg. 48,756, 48,763 (Aug. 14, 2012). Here, Apple directs us to disparate disclosures in McCormack, and then generally asserts that McCormack accounts for all the features recited in the “suspending” step. For instance, Apple cites to and relies upon the following disclosures in McCormack: (1) the “Background Art” section, *see, e.g.*, Ex. 1010, 1:63–64, 2:4–5; (2) the “Summary Disclosure of the Invention” section, *see, e.g., id.* at 3:14–18; and (3) the “Best Mode for

Carrying Out the Invention” section, *see, e.g.*, 8:7–16, 8:22–23, 8:30–35. Apple, however, does not provide a credible or sufficient explanation as to how one of ordinary skill in the art might combine these disparate disclosures to arrive at the “suspending” step.

As we explain in our Introduction Section above, § 314(a) places the burden on Apple to demonstrate that there is a reasonable likelihood that the combined teachings of McCormack and Kenworthy render obvious independent claim 25, which includes, among other things, offering concise, well-organized, easy-to-follow arguments as to how these asserted prior art references account for all the features recited in the “suspending” step. We decline to shoulder this burden and, as a result, we will not attempt to fit the disparate disclosures from McCormack together into a coherent explanation to supplement Apple’s insufficient arguments presented in its Petition. *Cf. United States v. Lanzotti*, 205 F.3d 951, 957 (7th Cir. 2000) (“It is not this court’s responsibility to research and construct the parties’ arguments.”).

To the extent that Apple relies upon the supporting testimony of Dr. Owens to bridge the gap between the disparate disclosures of McCormack, we are not persuaded. The testimony of Dr. Owens relied upon by Apple to support its position that McCormack teaches the “suspending” step either reiterates disclosures in McCormack with minimal discussion regarding the level of skill in art, *see e.g.*, Ex. 1003 ¶¶ 103–05, 156, 181, or essentially repeats the contentions offered by Apple in its Petition, *see e.g., id.* ¶¶ 207–10. Rarely, however, will minimal discussion regarding the level of skill in the art, without further explanation, act to bridge gaps in the substantive presentation of an asserted ground based on obviousness. *See Al-Site Corp. v. VSI Int’l, Inc.*, 174 F.3d 1308, 1324 (Fed. Cir. 1999). Consequently, we

do not credit Dr. Owens' cited testimony because it does not provide additional insight beyond Apple's insufficient arguments presented in its Petition that helps us evaluate how one of ordinary skill in the art might combine the disparate disclosures of McCormack to arrive at the "suspending" step.

Based on the record before us, Apple has not demonstrated a reasonable likelihood that it will prevail on its assertion that independent claim 25 would have been obvious over the combination of McCormack and Kenworthy.

4. *Claim 33*

Independent claim 33 recites, in relevant part, "read monitor unit tracks pixel information affected by previously rendered primitives . . . until said pixel information has had time to update." Ex. 1001, 18:54–59.

Apple contends that McCormack's fragment overlap detector 235 amounts to the claimed "read monitor unit" because it stores the addresses of pixel data that has been modified, i.e., that has been "affected by previously rendered primitives," and pixel information related to primitives to be rendered even though McCormack's system does not need to store the primitive's associated with the pixel. Pet. 56 (citing Ex. 1003 ¶¶ 159–62, 194, 244). Apple then argues that, because McCormack's fragment overlap detector 235 stores addresses for pixel information that has been read and modified, it tracks pixel information affected by previously rendered primitives. *Id.* (citing Ex. 1003 ¶¶ 195–97, 207–13, 244). Apple, therefore, asserts that "the [claimed] 'read monitor unit' of a combined McCormack/Kenworthy system would 'track[] pixel information affected by

previously rendered primitives.” *Id.* (citing Ex. 1003 ¶ 245) (emphases omitted).

In response, ZiiLabs contends that Apple does not attempt to address whether the claimed “read monitor unit tracks pixel information affected by previously rendered primitives . . . until said pixel information has had time to update.” Prelim. Resp. 48. ZiiLabs argues that McCormack does not contemplate that the clearance of the CAM associated with fragment overlap detector 235 is related, or dependent upon, the pixels in pixel write queue 220 being written or, alternatively, pixels in the pipeline being discarded. *Id.* at 49. Instead, ZiiLabs argues that McCormack’s CAM is filled continually by new fragment addresses when no overlap is detected by fragment overlap detector 235. *Id.* (citing Ex. 1010, 7:34–45). ZiiLabs further argues that the CAM is cleared only when fragment overlap detector 235 detects an overlap or it becomes completed filled—not when the pixel write queue 220 is serviced. *Id.* (citing Ex. 1010, 3:64–4:1, 7:36–38).

We are persuaded by ZiiLabs’ arguments because we cannot discern how McCormack’s fragment overlap detector 235 tracks pixel information until the pixel information has had time to update, as required by independent claim 33. At best, McCormack discloses that fragment overlap detector 235 tracks pixel information to determine if there is overlap between the most recently received pixel information and previously received pixel information, and tracks pixel information to determine whether the CAM has reached full capacity. *See* Ex. 1010, 7:36–38, 9:30–35. Apple does not direct us to, nor can we find, a disclosure in McCormack that indicates fragment overlap detector 235 tracks pixel information until it determines that pixel write queue 220 has sufficient time to write or update

the pixel information. Absent such a disclosure, we are not persuaded that Apple has presented sufficient evidence to support a finding that McCormack teaches the “read monitor unit tracks pixel information affected by previously rendered primitives . . . until said pixel information has had time to update,” as recited in independent claim 33.

There is at least one additional consideration that weighs in favor of us determining that Apple has not satisfied the “reasonable likelihood” threshold standard for instituting an *inter partes* review of independent claim 33. In its Petition, Apple relies exclusively on the cited testimony of Dr. Owens to support its position that McCormack’s fragment overlap detector 235 constitutes the claimed “read monitor unit” that performs the function of “tracking.” A cursory review of the cited testimony of Dr. Owens reveals numerous nested string citations to other portions of his Declaration. *See, e.g.*, Ex. 1003 ¶ 160 (citing ¶¶ 103–09, 156), ¶ 194 (citing ¶¶ 60–69), ¶ 195 (citing ¶¶ 103–09, 156, 159, 160), ¶ 207 (citing ¶¶ 109, 181, 182), ¶ 244 (citing ¶¶ 159–62, 195–97, 207–13). These nested citations, in total, amount to roughly thirty paragraphs of Dr. Owens’ Declaration. In essence, the Petition provides citations to arguments presented in Dr. Owens’ Declaration, which, in turn, cite to additional paragraphs of his own Declaration as support for those arguments. Such incorporation by reference is improper. *See* 37 C.F.R. § 42.6(a)(3) (“Arguments must not be incorporated by reference from one document into another document.”); *see also DeSilva v. DiLeonardi*, 181 F.3d 865, 866–67 (7th Cir. 1999) (Incorporation by reference “amounts to a self-help increase in the length of the . . . brief A brief must make all arguments accessible to the judges, rather than ask them to play archeologist with the record.”).

The nested citations in Dr. Owen’s Declaration effectively obscure the evidence on which Apple relies as teaching the claimed “read monitor unit” and the corresponding function of “tracking.” Consequently, we give no weight to these nested citations because Apple fails to explain their relevance to its asserted ground based on the combination of McCormack and Kenworthy. *See* 37 C.F.R. § 42.104(b)(5) (“The Board may . . . give no weight to the evidence where a party has failed to state its relevance or to identify specific portions of the evidence that support the challenge.”).

Based on the record before us, Apple has not demonstrated a reasonable likelihood that it will prevail on its assertion that independent claim 33 would have been obvious over the combination of McCormack and Kenworthy.

E. Obviousness Over the Combination of McCormack, Kenworthy, and Becker

Apple also contends that independent claims 25 and 33 are unpatentable under § 103(a) over the combination of McCormack, Kenworthy, and Becker. Pet. 47–51, 57–60. In these asserted grounds based on obviousness, Apple does not apply the teachings of Becker in such a way that remedies the deficiencies in the combination of McCormack and Kenworthy discussed above. *See generally id.* Therefore, for the same reasons discussed above, Apple has not demonstrated a reasonable likelihood that it will prevail on its assertion that independent claims 25 and 33 would have been obvious over the combination of McCormack, Kenworthy, and Becker.

III. CONCLUSION

Taking into account the arguments presented in ZiiLabs' Preliminary Response, we conclude that the information presented in the Petition does not establish that there is a reasonable likelihood that Apple will prevail in challenging claims 21, 25, and 33 of the '649 patent as unpatentable under §§ 102(e) and 103(a).

IV. ORDER

In consideration of the foregoing, it is ORDERED that the Petition is DENIED and no trial is instituted.

IPR2015-00963
Patent 6,977,649 B1

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