

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

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KEWAZINGA CORP., :
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Plaintiff, :
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-v- :
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MICROSOFT CORPORATION :
Defendant. :
:
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1:18-cv-4500-GHW

CLAIM CONSTRUCTION
OPINION

GREGORY H. WOODS, United States District Judge:

Plaintiff Kewazinga Corp. (“Kewazinga”) commenced this action against Defendant Microsoft Corporation (“Microsoft”) on May 21, 2018. Plaintiff asserts that Microsoft has infringed, and continues to infringe, three patents which teach telepresence systems, devices, and methods that enable one or more users to navigate imagery through a remote environment. The three patents at issue are (1) the February 8, 2013 patent numbered 6,522,325 (the “‘325 Patent”); (2) the March 18, 2013 patent numbered 6,535,226 (the “‘226 Patent”); and (3) the June 9, 2015 patent numbered 9,055,324 (the “‘234 Patent,” and collectively, the “Asserted Patents”). The ‘325 and ‘226 Patents are both titled “Navigable Telepresence Method and System Utilizing an Array of Cameras.” The ‘234 Patent is titled “Navigable Telepresence Method and System.”

The parties are before the Court seeking claim construction.¹ The Court has been asked to construe the following terms, listed below, which each appear in one or more of the Asserted Patents.²

- “mosaicing;”

¹ The Court held a *Markman* hearing on July 18, 2019.

² Dependent terms are nested under the term upon which they depend. While certain terms appear in the claims of more than one of the Asserted Patents, no party has requested that the Court construe any term separately, in the context of each patent in which it appears.

- “mosaic imagery;”
- “mosaic images;”
- “mosaic imagery along the [first] [second] view;”
- “mosaicing the selected outputs of cameras in the [first] [second] view;”
- “mosaicing the first image with the second image and then mosaicing the second image with the third image;”
- “displaying the first, second, third and mosaic images in sequence to obtain a seamless view through the environment;”
- “tweening;”
 - “tweened imagery;”
 - “tweened;”
 - “tweening the selected outputs of cameras in the [first] [second] path;”
 - “tweening the image of a current camera in the sequence to the image of a next camera in the sequence;”
 - “cause imagery on two or more different perspectives along the first view to be tweened;”
 - “tweening imagery of two or more different perspectives along the first view;”
 - “tweening the first image with the second image to obtain a first tweened image and then tweening the second image with the third image to obtain a second tweened image;”
- “array of cameras;”
- “compositing imagery of the different perspectives of the environment along the first view;”
 - “compositing imagery of the first perspective of the environment and imagery of the second perspective of the environment;”
- “mixing the first image with the second image to produce a mixed image;”
- “perspective;”
 - “point perspective;”
 - “different perspective;”
 - “progressively different perspective(s);”
 - “different point perspective;”
 - “having an associated view of the environment from a progressively different point perspective;”
 - “[first] [second] perspectives;”
- “local scene characteristics;”
- “warping imagery;”
- “different places;”
- “progressively different locations;”
- “progressively different associated view of the environment along a path;”
- “view through the environment;” and
- “viewing the environment along the [first] [second] view.”

Additionally, Defendant asserts that the following terms are indefinite:

- “a field of view that overlaps that of an adjacent cameras;” and

- “91. A device for providing a user with a display of an environment in response to user inputs, the system comprising The system of claim 91.”³

The Court’s construction is detailed below, and summarized in Attachment A to this opinion.

I. Legal Standard⁴

A. Claim Construction Generally

In order to protect effectively an inventor’s rights, patents must describe the exact scope of an invention. *See Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 373 (1996) (“[A] patent must describe the exact scope of an invention and its manufacture to secure to [the patentee] all to which he is entitled, [and] to apprise the public of what is still open to them.”) (alterations in quoted material) (internal quotation marks and citation omitted). “It is well established that determining infringement is a two-step process” whereby, the court must first construe a patent’s claim limitations to define the meaning and scope of the invention, and second, must compare the accused device to the construed claims. *See Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115-16 (Fed. Cir. 2004) (citations omitted).

“‘[T]he construction of a patent, including terms of art within its claim,’ is not for a jury but ‘exclusively’ for ‘the court to determine.’” *Teva Pharmaceuticals USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 835 (2015) (quoting *Markman*, 517 U.S. at 390). In deciding matters of claim construction, district courts have discretion regarding the procedure by which to reach a final determination. *See Ballard Med. Prods. v. Allegiance Healthcare Corp.*, 268 F.3d 1352, 1358 (Fed. Cir. 2001) (“District courts have wide latitude in how they conduct the proceedings before them, and there is nothing unique about claim construction that requires the court to proceed according to any particular

³ While Defendant originally submitted further contentions of indefiniteness, Defendant has subsequently clarified that it is not requesting that the Court consider those additional contentions at this time. *See* Reply at 25 n.7.

⁴ Adopted, in part and with alterations, from the Honorable Kiyo A. Matsumoto’s excellent statement of the applicable legal standard in *Bedgear, LLC v. Fredman Bros. Furniture Co., Inc.*, 2:15-cv-6759-KAM, 2019 WL 911301, at *1 (E.D.N.Y. Feb. 25, 2019).

protocol. As long as the trial court construes the claims to the extent necessary to determine whether the accused device infringes, the court may approach the task in any way that it deems best.”).

In addition, the Court need only construe claims that are “in controversy” and only “to the extent necessary to resolve the controversy.” *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (citation omitted); *see also Ballard*, 268 F.3d at 1358 (“If the district court considers one issue to be dispositive, the court may cut to the heart of the matter and need not exhaustively discuss all the other issues presented by the parties.”). Further, the Court is “not required to construe every limitation present in a patent’s asserted claims,” but rather, the focus is on “resolution of disputed meanings and technical scope . . . for use in determination of infringement.” *O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) (emphasis omitted) (citations omitted). In the event “the parties chose to treat [certain] terms across [separate] patents as rising and falling together” the Court need not “separately address [every] Patent.” *X2Y Attenuators, LLC v. Int’l. Trade Commn.*, 757 F.3d 1358, 1363 n.2 (Fed. Cir. 2014).

B. Sources for Claim Construction

Courts must construe patent claims “objectively and without reference to the accused device.” *Vivid Techs.*, 200 F.3d at 803. This means that courts must “seek[] to accord a claim the meaning it would have to a person of ordinary skill in the art at the time of the invention” (to a “POSITA”). *Innova/Pure Water, Inc.*, 381 F.3d at 1116 (citations omitted). In doing so, a court considers three primary sources within the intrinsic evidence of record: (1) the language of the claims; (2) the specification; and (3) the prosecution history. *Secure Web Conference Corp. v. Microsoft Corp.*, No. 13-cv-2642-JG, 2014 WL 4954644, at *1 (E.D.N.Y. Oct. 2, 2014) (citing *Vitronics Corp. v. Conception, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

1. Claim Language

First, the Court “look[s] to the words of the claims themselves, both asserted and non-asserted, to define the scope of the patented invention.” *HowLink Global LLC v. Network Commc’ns Int’l. Corp.*, 561 F. App’x 898, 905 (Fed. Cir. 2014) (quoting *Vitronics*, 90 F.3d at 1582). In making such a determination, “[t]he words of the claim are the controlling focus.” *Secure Web*, No. 13-cv-2642, 2014 WL 4954644, at * 2 (citing *Digital Biometrics, Inc., v. Identix, Inc.*, 149 F.3d 1335, 1344 (Fed. Cir. 1998)).

In general, the language of a claim is given its ordinary and customary meaning unless a distinct definition is employed in the specification or prosecution history. *See Digital Biometrics*, 149 F.3d at 1344 (“The written description is considered, in particular to determine if the patentee acted as his own lexicographer, as our law permits, and ascribed a certain meaning to those claim terms. If not, the ordinary meaning, to one skilled in the art, of the claim language controls.”) (citing *York Prods., Inc. v. Central Tractor Farm & Family Ctr.*, 99 F.3d 1568, 1572 (Fed. Cir. 1996)). The ordinary and customary meaning of a claim term is that which one of “skill in the art at the time of the invention” would understand. *Innova/Pure Water*, 381 F.3d at 1116 (citations omitted); *see also InTouch Techs, Inc. v. VGO Commc’ns Inc.*, 751 F.3d 1327, 1339 (Fed. Cir. 2014) (“Generally, a claim term is given the ordinary and customary meaning as understood by a person of ordinary skill in the art at the time of invention.”) (citation omitted); *Interactive Gift Exp., Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1332 (Fed. Cir. 2001) (“Throughout the construction process, it is important to bear in mind that the viewing glass through which the claims are construed is that of a person skilled in the art.”) (citations omitted)).

In interpreting claim terms, courts have applied the doctrine of “claim differentiation.” This doctrine “stems from the common sense notion that different words or phrases used in

separate claims are presumed to indicate that the claims have different meanings and scope,” and creates a “presumption that two independent claims have different scope when different words or phrases are used in those claims.” *Seachange Int’l, Inc. v. C-COR, Inc.*, 413 F.3d 1361, 1368-69 (Fed. Cir. 2005) (internal quotation marks and citations omitted). The Court of Federal Claims has applied this doctrine in declining to “infer that two different words within a claim . . . have the same meaning.” *TDM Am., LLC v. United States*, 85 Fed. Cl. 774, 794 (2009) (citing *Andersen Corp. v. Fiber Composites, LLC*, 474 F.3d 1361, 1369 (Fed. Cir. 2007)).

Claim differentiation, however, is “a guide, not a rigid rule.” *Laitram Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1538 (Fed. Cir. 1991) (quoting *Autogiro Co. of Am. v. United States*, 384 F.2d 391, 404 (Ct. Cl. 1967)); accord *Marine Polymer Techs., Inc. v. HemCon, Inc.*, 672 F.3d 1350, 1359 (Fed. Cir. 2012) (citations omitted). Accordingly, it “is not as strong across related patents as it would be if the different claim limitations appeared in the same patent.” *Clare v. Chrysler Grp. LLC*, 819 F.3d 1323, 1330 (Fed. Cir. 2016).

2. Specification

Next, the Court looks at a patent’s specification, as “[c]laims must be read in view of the specification, of which they are a part.” *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (citations omitted), *aff’d*, 517 U.S. 370 (1996). “The specification contains a written description of the invention which must be clear and complete enough to enable those of ordinary skill in the art to make and use it.” *Vitronics*, 90 F.3d at 1582. Consequently, “the specification is always highly relevant to the claim construction analysis,” “is the single best guide to the meaning of a disputed term,” and is “[u]sually . . . dispositive.” *Id.*

In setting out a clear and complete written description, a patent’s specification may also include a particular definition of a term that supersedes the term’s “plain and ordinary meaning.” *See Stryker Corp. v. Zimmer, Inc.*, 837 F.3d 1268, 1272 (Fed. Cir. 2016) (noting exception to the

general rule that courts look to terms' plain and ordinary meanings "when a patentee sets out a definition and acts as her own lexicographer") (citations omitted)).

Therefore, the specification may assist in the Court's determination of whether the inventor intentionally used any terms in the claims in a manner inconsistent with their ordinary meaning; however, this intention must be clear. *See Vitronics*, 90 F.3d at 1582 ("[A] patentee may choose to be his own lexicographer and use terms in a manner other than their ordinary meaning, as long as the special definition of the term is clearly stated in the patent specification or file history.") (citations omitted).

Additionally, where a specification discloses an embodiment, a claim construction that renders the embodiment outside the scope of the claim "is rarely, if ever, correct and would require highly persuasive evidentiary support." *Id.* at 1583 (citations omitted). Further, "it is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited." *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004) (citations omitted).

3. Prosecution History

Third, the Court may consider the prosecution history of the patent, if it is in evidence. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1317 (Fed. Cir. 2005) (citing *Markman*, 52 F.3d at 980); *accord Ambil Enterprises Ltd. v. Wawa, Inc.*, 81 F.3d 1554, 1559 (Fed. Cir. 1996) ("The prosecution history, in addition to being used while considering the factual issue of infringement and whether prosecution history estoppel places any limitations on what infringes a claim, should also be used when considering the legal issue of proper claim construction.") (citations omitted)). The prosecution history contains a complete record of all the proceedings before the Patent and Trademark Office, including any express representations made by the applicant regarding the

scope of the claims. As such, the record before the Patent and Trademark Office is often of critical significance in determining the meaning of the claims. *See Markman*, 52 F.3d at 980.

Importantly, “[t]he prosecution history limits the interpretation of claim terms so as to exclude any interpretation that was disclaimed during prosecution.” *Southwall Tech., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1576 (Fed. Cir. 1995) (citations omitted). However, “[a]bsent a clear disavowal or contrary definition in the specification or the prosecution history, the patentee is entitled to the full scope of its claim language.” *Home Diagnostics, Inc. v. LifeScan, Inc.*, 381 F.3d 1352, 1358 (Fed. Cir. 2004).

Accordingly, a party asserting prosecution history disclaimer has the “burden of proving the existence of a ‘clear and unmistakable’ disclaimer that would have been evident to one skilled in the art.” *Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1063-64 (Fed. Cir. 2016) (citation omitted).

4. Extrinsic Evidence

Finally, although it is well-settled that courts should look primarily to the intrinsic evidence of record in resolving a claim construction dispute, extrinsic evidence may be considered when ambiguity remains after consulting the intrinsic evidence. *Vitronics*, 90 F.3d at 1583. Extrinsic evidence has been defined to include evidence external to the patent and prosecution history, such as expert testimony, inventor testimony, dictionaries, and relevant treatises or articles. *See Secure Web*, 2014 WL 4954644, at *2 (citing *Phillips*, 415 F.3d at 1317); *accord Vitronics*, 90 F.3d at 1584 (citations omitted).

“[E]xtrinsic evidence in general, and expert testimony in particular,” however, “may be used only to help the court come to the proper understanding of the claims; it may not be used to vary or contradict the claim language.” *Vitronics*, 90 F.3d at 1584 (citing *Markman*, 52 F.3d at 980). Further, “extrinsic evidence is ‘less significant than the intrinsic record in determining the legally operative meaning of claim language.’” *Secure Web*, 2014 WL 4954644, at *2 (quoting *Phillips*, 415

F.3d at 1317). Consequently, in permitting consideration of extrinsic evidence, “[t]he Federal Circuit has cautioned courts not to place too much reliance on extrinsic evidence and too little reliance on intrinsic sources.” *Id.* at *2 (citing *Phillips*, 415 F.3d at 1320).

II. Construction of Disputed Terms

A. Claims Construed

“The purpose of claim construction is to “determin[e] the meaning and scope of the patent claims asserted to be infringed.” *O2 Micro Intern.*, 521 F.3d at 1360 (Fed. Cir. 2008) (quoting *Markman*, 52 F.3d at 976). “When the parties raise an actual dispute regarding the proper scope of these claims, the court, not the jury, *must* resolve that dispute.” *Id.* (citation omitted) (emphasis added).

Here, the parties have disputed the meaning of numerous terms within the claims of the Asserted Patents, which may impact the ultimate determination as to infringement. Accordingly, the Court is obligated to construe those terms.

For many of the terms at issue, Plaintiff contends that construction is unnecessary, and offers its proposed construction only in the alternative. Plaintiff does not, however, adequately explain how the Court can avoid its “duty” to construe disputed claim terms. *Id.* (“When the parties present a fundamental dispute regarding the scope of a claim term, it is the court’s duty to resolve it.”). Accordingly, the Court will construe the claim terms subject to a “fundamental dispute.” *Id.*

However, “district courts are not (and should not be) required to construe every limitation present in a patent’s asserted claims.” *Id.* Indeed, there is no utility to claim construction that merely inserts “meaningless verbiage into the definition of the claimed invention.” *Harris Corp. v. IXYS Corp.*, 114 F.3d 1149, 1152-53 (Fed. Cir. 1997). Accordingly, the Court will not construe dependent terms, whose meanings are clear in light of the Court’s construction of the term on

which they depend. Nor will the Court construe terms whose meaning is no longer subject to dispute. *See* Attachment A.

B. “Mosaicing,” “Mosaic Imagery,” and Other Dependent Terms⁵

1. “Mosaicing” and “Mosaic Imagery”

Plaintiff’s Proposed Construction: “creating imagery assembled from a plurality of images, or portions thereof, including an alignment process and a composition process.”

Defendant’s Proposed Construction: “generating a seamless image by combining two or more overlapping images that were captured at different camera locations.”

For the reasons that follow, the Court adopts Plaintiff’s proposed construction. Also for the reasons that follow, the Court construes the term “mosaic imagery” as “images created by mosaicing.”

The term “mosaicing” appears in the claims of the ‘325 Patent, and the term “mosaic imagery” appears in the claims of the ‘234 Patent. Neither patent, however, purports to teach a system or method for “mosaicing” or the creation of “mosaic images.” Rather, the ‘325 Patent teaches a “telepresence system for providing a first user with a first display of an environment and a second user with a second display of the environment,” ‘325 Patent, Claim 1, 20:56-59. The ‘325 Patent anticipates the deployment of an “array of cameras,”⁶ which collect images of the environment. *Id.*, 20:66-67. Users are able to navigate a path through the environment, facilitated by the system, which “sequentially mosaic[s] the selected outputs of cameras.” *Id.* 21:22-26. The ‘234 Patent teaches “methods and systems permit[ing] one or more users to navigate through imagery of an environment,” ‘234 Patent, Abstract, and includes the utilization of arrays of

⁵ The term “mosaic imagery” is also dependent on the definition of the term “mosaicing.” However, as the term “mosaicing” appears in the claims of the ‘325 Patent, while “mosaic imagery” appears in the claims of the ‘234 Patent, the Court will discuss both terms in this section.

⁶ *See* § II(D), below.

cameras in its preferred embodiments. *E.g. id.* at 5:1-34. Neither Patent, however, teaches the meaning of the terms “moasiacing” or “mosaic images” within the confines of its text. Rather, both patents, in their specifications, expressly incorporate by reference U.S. Patent No. 5,649,032 entitled “A System For Automatically Aligning Images to Form a Mosaic Image” (the “Burt Patent”). ‘234 Patent 17:30-41; ‘325 Patent 13:15-25; *see X2Y Attenuators, LLC v. Int’l. Trade Commn.*, 757 F.3d at 1362-63 (“incorporated patents are effectively part of the host patents as if they were explicitly contained therein.”) (quotation mark, alterations, and footnote omitted). As explained below, the Burt Patent teaches a “system for automatically generating a mosaic” which is otherwise unarticulated articulated in the body of the ‘234 and ‘325 Patents. *Burt Patent*, Claim 1, 21:11. Accordingly, the Court looks to the Burt Patent to determine the meaning of the terms “mosaicing” and “mosaic imagery.”

After incorporating the Burt Patent by reference, the ‘234 and ‘325 Patents provide the following description of the “mosaicing” process:

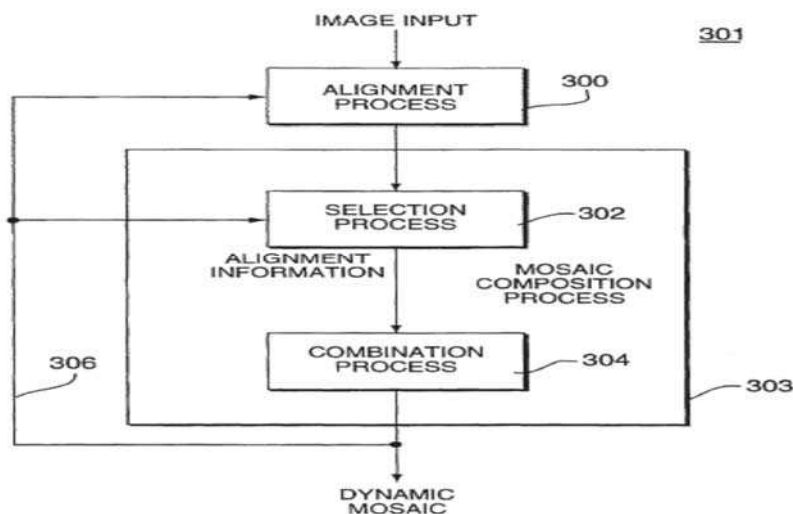
The server **18** automatically aligns one camera output to another camera output, a camera output to another mosaic (generated from a previous camera output) such that the output can be added to the mosaic, or an existing mosaic to a camera output.

Once the mosaic alignment is complete, the present embodiment utilizes a mosaic composition process to construct (or update) the mosaic. The mosaic composition comprises a selection process and a combination process. The selection process automatically a selects outputs for incorporation into the mosaic and may include masking and cropping functions to select the region of interest in a mosaic. Once the selection process selects which output(s) are to be included in the mosaic, the combination process combines the various outputs to form the mosaic. The combination process applies various output processing techniques, such as merging, fusing, filtering, output enhancement, and the like, to achieve a seamless combination of the outputs. The resulting mosaic is a smooth view that combines the constituted outputs such that the temporal and spatial information redundancy are minimized in the mosaic.

‘234 Patent 17:37-57, ‘325 Patent 13:21-42 (indent in original).

The Burt Patent expressly teaches a “system for automatically generating a mosaic from a plurality of input images,” as refered to in the ‘234 and ‘325 Patents. *Burt Patent*, Abstract. Figure

3 of the Burt Patent, reproduced below, is the patent’s reference point for what it refers to as the “Mosaic Construction System.” Burt Patent, 5:36-44.⁷



Referencing Figure 3, the Burt Patent teaches that the “mosaicing” process taught by the Burt Patent involves the following steps. First, in the image input step, an image or preexisting mosaic is selected. “If a mosaic does not currently exist, i.e., the input image is the first image of a sequence of images, then the first [non-mosaiced] image is used as a previously constructed mosaic.” Burt Patent, 5:52-55. Next, the input image is aligned with the preexisting mosaic. *Id.* at 5:50-6:3.

Then, the mosaic composition process ensues. Within the composition process are two sub-processes. In the first, the “selection process selects which portions of the input image and current mosaic will be used to form an updated mosaic.” *Id.* at 10-11. Then the “combination process” takes place:

The combination process combines the aligned images to form an updated mosaic. The combination process performs one or more of the following processes to seamlessly combine the input image with the mosaic: merging, fusion,

⁷ In the cited section, the Burt Patent teaches “Dynamic Mosaic Construction” as opposed to “Static Mosaic Construction.” However, the “Static Mosaic Construction” System largely incorporates the dynamic system in its discussion. *See* Burt Patent, 12:15-18 (“FIG 14 depicts a static mosaic construction system which contains similar components to that of the dynamic mosaic construction system.”)

interpolation, extrapolation, enhancement, coring, as well as other conventional image combining processes. The output is an updated dynamic mosaic containing seamlessly combined image information from the latest input image.

Id. at 6:18-25.

In light of the Burt Patent's teaching of "mosaicing," and the '234 and '325 Patents' reference to the Burt Patent's "mosaicing" system, which is incorporated by reference into the '234 and '325 Patents, Plaintiff's proposed construction, "creating imagery assembled from a plurality of images, or portions thereof, including an alignment process and a composition process" is accurate. No party contests, nor plausibly could contest in light of the intrinsic evidence, that "mosaicing" as taught in the 'Burt Patent, and incorporated into the '234 and '325 Patents, involves the creation of imagery from a plurality of images or portions thereof, or that mosaicing involves an alignment process and a combination process. Rather, Defendant contends, through its proposed construction and its argumentation, that "mosaicing" has three additional requirements: (1) that the result of "mosaicing" must be seamless; (2) that images to be "mosaiced" must be overlapping; and (3) that the images to be "mosaiced" must have been captured at different camera locations. For the reasons that follow, none of those proposed requirements are properly included in the Court's construction.

a. Seamlessness

Defendant's proposed requirement that "mosaicing" result in a seamless image is rejected for the reasons that follow.

The Burt Patent makes clear that a mosaic can be formed even if that mosaic is not perfectly seamless.

After processing, the individual images are combined to form a mosaic, i.e. an image that contains a plurality of images. Additional image processing is performed to ensure that the seams between the images are invisible such that the mosaic looks like a single large image.

Burt Patent, 1:20-25.

Plaintiff's expert, Dr. Hanna, concurs, citing the above quoted text of the Burt Patent to support his contention that "while a mosaic may be seamless, it is not required to be." Decl. of Keith Hanna ("Hanna Decl."), Dkt. No. 43, ¶ 27; Supp. Decl. of Keith Hanna, Dkt. No. 48, 4 ("The ordinary meaning of the term 'mosaic' to a POSITA does not require a seamless image.").

Taken together, the intrinsic and extrinsic evidence cited above establishes that a mosaic need not be seamless. While that is strong evidence that "mosaicing" does not require a seamless output, it does not fully resolve whether, or to what extent, seamlessness is a requirement of "mosaicing."

There is a gap, unaddressed by either party, between the term "mosaic," which no party has asked the Court to construe, and the term "mosaicing," which Court must construe, and that gap is potentially relevant to the question of whether the product of "mosaicing" must be a seamless image. In making this observation, the Court notes Dr. Hanna's carefully crafted statements quoted above, in which he clearly states that a mosaic need not be seamless, but does not go so far as to say that "mosaicing" as used in the '234 and '325 Patents is divorced from the requirement of seamlessness, or some degree of effort to achieve seamlessness, regardless of whether those efforts are fully successful in eliminating any seams.

This linguistic distinction is somewhat grammatically analogous to the terms "drafting" and "draft," used in the context of drafting a document. It may be the case that the a given "draft" has not been proof-read. It does not necessarily follow, however, that the "drafting" process does not include proof-reading. Similarly, here, the fact that a "mosaic" need not be seamless does not necessarily mandate that the "mosaicing" process not include steps aimed at minimizing the seams in the resulting image.

Returning to the language of the Burt Patent quoted above, while the Burt Patent makes it clear that a mosaic can be formed prior the additional processing "performed to ensure that the

seams between the images are invisible,” Burt Patent, 1:20-25, the same section of the Burt Patent also indicates that such additional processing would be performed. *Id.* (“Additional image processing *is* performed”) (emphasis added). The question presented, therefore, is whether that additional processing is necessarily part of the “mosaicing” process.

As discussed above, the “mosaicing” system described in the Burt Patent, and the application of that system in the ‘234 and ‘325 Patents, both anticipate the use of image processing with the aim of reducing seams in the resulting image. This, perhaps, is why Dr. Hanna was so careful to cabin his comments to the noun “mosaic,” rather than to the term before the Court, “mosaicing.” However, while there are multiple references to seamlessness in pertinent parts of the intrinsic evidence, the Court finds that Defendant’s proposed requirement of perfect seamlessness cuts too broadly, and is accordingly rejected for the reasons that follow.

During the deposition of Defendant’s expert, Dr. Stevenson, the following exchange took place.

Q. Back to the seamless image requirement in your definition, are there varying degrees of seamlessness?

A. Well, the -- you know, there’s been a bunch of algorithms that have been developed to do mosaicing. Some of them, they fail at covering some seams. Sometimes, you might say it’s a problem. But, you know, once a seam becomes visible, it’s there. You can see it.

Q. So if it fails, you no longer have a mosaic?

A. Correct. If you see the seam, you don’t have a mosaic.

March 12, 2019 Deposition of Robert L. Stevenson, Dkt. No. 52-1, 156:9-22. This testimony highlights a fundamental flaw with the proposed requirement of seamlessness as applied to “mosaicing”—seamlessness can only be determined *a posteriori*. According to Dr. Stevenson, if a seam can be detected, then the image is not seamless, and no mosaic was formed.

Q. You mentioned that sometimes the algorithm to make an image seamless sometimes fails, right? So I take it’s your opinion, then, that in the instances where it

fails, it failed to generate a mosaic; and the instances where it did not fail, it did generate a mosaic

A. Correct.

Id. 185:22-186:5. If Dr. Stevenson’s view of mosaic formation were imported into the Court’s construction of “mosaicing,” the outcome would be untenable. According to Dr. Stevenson, one cannot determine whether a mosaic has been formed until one determines whether any image processing algorithms employed were successful in rendering the image perfectly seamless. If applied to the term “mosaicing” that same logic would imply that whether the “mosaicing” process took place could only be determined *a posteriori*, with full knowledge of whether any image processing techniques employed during the “mosaicing” process successfully rendered the resulting image seamless. Applying such an outcome-based requirement to the construction of “mosaicing,” would be inconsistent with the Burt Patent, which teaches systems and methods for “mosaicing.” Returning to the previous example based on drafting, the Court observes that the presence of a typo in a draft does not imply that the drafting process does not have a proof-reading step, and the failure to correct a typo in a draft does not prevent a document from being a draft, even if proof-reading is assumed to be a mandatory step of drafting.

From all of this, the Court concludes as follows: First, that the mere fact that a mosaic can be formed such that it has seams does not necessitate that “mosaicing” does not involve image processing aimed at removing those seams. And second, that incorporating the proposed requirement of seamlessness into the construction of the term “mosaicing” is inappropriate because that requirement would render a determination of whether “mosaicing” took place contingent on the outcome of the “mosaicing” process, rather than the utilization of that process,

contrary to the intrinsic evidence. For all these reasons, the Court rejects Defendant's contention that "mosaicing" must result in a seamless image.⁸

b. Overlapping Images and Different Camera Locations

Defendant contends that "mosaic imagery" and "mosaicing" must include two additional requirements: (1) that the images combined to form a mosaic are overlapping; and (2) that the images to be "mosaiced" must have been captured at different camera locations. Defendant's proposed requirements are contradicted by the intrinsic evidence, and are accordingly rejected.

The '234 Patent is instructive in regard to the proposed requirement that the constituent images to be "mosaiced" must be overlapping. The summary section of the '234 Patent states: "The system receives electronic imagery of progressively different perspectives of the environment having overlapping fields of view and generates electronic mosaic imagery of the environment." '234 Patent at 3:18-22. In that passage, the use of overlapping images is required not by the term "mosaic imagery," but is instead a requirement imposed by surrounding language on the types of "electronic imagery" utilized in the '234 Patent."⁹ That convention is consistently reflected in the claims of the '234 Patent. *E.g.* '234 Patent, Claim 1, 25:20-25 (requiring that electronic imagery be overlapping, and then teaching mosaicing of that imagery). Accordingly, any requirement that the imagery to be "mosaiced" must be overlapping is not imposed by the term "mosaic imagery" but is instead the result of other language in the claims.¹⁰ *See Phillips v. AWH Corp.*, 415 F.3d 1303,

⁸ The Court notes that the "mosaicing" process taught by the Burt Patent includes image processing aimed at reducing seams in the resulting image. The Court further understands that in the methods and systems taught by the Burt Patent, such processing takes place during the "composition" process. For the reasons above, the Court has rejected the proposed requirement that "mosaicing" must result in a seamless image. In the event that the presence or absence of image processing aimed at reducing seams in "mosaiced" images proves to be pertinent to any claim or defense in this case, the Court will consider supplemental briefing as to the meaning of the term "composition process."

⁹ The parties have not requested that the Court construe the term "electronic imagery" and the Court does not do so here.

¹⁰ Defendant also contends that the '325 Patent's critique of prior art which utilized non-overlapping imagery is pertinent here. Def.'s Br. at 16 (citing '325 Patent at 2:7-20). Defendant does not explain, however, why the '325

1314 (Fed. Cir. 2005) (“the claim in this case refers to ‘steel baffles,’ which strongly implies that the term “baffles” does not inherently mean objects made of steel.”).

Similarly, any requirement in the ‘325 Patent that the imagery to be “mosaiced” must be overlapping is an artifact of surrounding claim language, rather than inherent in the term “mosaicing.” This is seen, for example, in the following text:

An interface device, having inputs for selecting a path through at least a portion of the array from which to view the environment, the path including a sequence of cameras, each camera in the sequence having a different point perspective and a field of view that overlaps that of an adjacent camera.
A display device for sequentially displaying the image from each camera in the sequence by mosaicing the image of a current camera in the sequence to the image of a next camera in the sequence

‘325 Patent, Claim 5, 21:66-22:8.

Furthermore, the Burt Patent teaches that methods for filling gaps between images to be mosaiced is within the scope of the “mosaicing” process:

The interpolation and extrapolation process, at step 608, is used in a conventional manner to fill gaps between images comprising the mosaic.

Id., 11:51-53.

. . . a computer applies various image combines processes to the images to remove any . . . gaps between the images.

Burt Patent, 1:31-33. Such gap filling would presumably not be required if the images in the mosaic were necessarily overlapping, as Microsoft argues. Accordingly, Defendant’s proposed requirement of overlapping images is contrary to the intrinsic evidence, and is rejected.¹¹

Patents critique of non-overlapping imagery-based techniques should be read into the construction of the term “mosaicing.” *See* n.11, below.

¹¹ Defendant’s arguments to the contrary are unavailing. Defendant contends that the Asserted Patents contain several examples of the terms being used in the context of overlapping images. Def.’s Br. at 15 (collecting examples), and further contend that “never once do the [‘234 and ‘325 P]atents describe an embodiment of mosaicing of imagery of the environment in which the images that are mosaiced are not overlapping.” Def.’s Br., Dkt. No. 46 at 15. Such contentions, however, do not explain why the requirement of overlapping imagery should be read into the term

Defendant’s contention that “mosaicing” and “mosaic imagery” should be understood as requiring the use of images captured at different camera locations is similarly unavailing. As explained above, the Burt Patent was incorporated by reference, and teaches a process for “mosaicing” that was otherwise insufficiently articulated in the Asserted Patents. And the Burt Patent teaches a process for the creation of “mosaic imagery” without imposing any specific requirements on the methods by which the images to be processed were captured or generated. The natural consequence of that element of the intrinsic evidence is that a POSITA would not understand the terms “mosaicing” and “mosaic imagery” to inherently require that the images to be processed were captured at different locations or by different cameras. This also accords with the claim language, in which any requirement as to the use of imagery captured at different camera locations stems from the language surrounding the term “mosaicing,” such as the phrase “progressively different perspectives,” not the meaning of the term itself. *E.g.* ‘234 Patent, Claim 1, 20:25 (store electronic imagery of progressively different perspectives of the enjoinder having overlapping fields of view . . . generate mosaic imagery from the electronic imagery”).

Accordingly, while Defendant points to numerous examples of these terms being used in contexts which may require the use of multiple cameras at different locations,¹² as with the proposed requirement of overlapping images, this proposed requirement inappropriately seeks to read the limitations imposed by the context in which the terms “mosaicing” and “mosaic imagery” are used into the definition of those terms. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314. For all these reasons, the Court declines to import the requirement of different cameras into the terms “mosaicing” or “mosaic imagery.”

“mosaicing,” as opposed to being an artifact, when applicable, of the surrounding claim language, as the Court has explained.

¹² *E.g.* ‘325 Patent, Claim 1, 2114-17 (“ . . . mix the outputs of cameras in the first path by . . . sequentially mosaicing the selected outputs of cameras in the first path.”)

c. Conclusion

For the reasons articulated above, the Court adopts Plaintiff's proposed construction of the term "mosaicing," and construes the term to mean "creating imagery assembled from a plurality of images, or portions thereof, including an alignment process and a composition process."

As discussed above, the Court construes the term "mosaic imagery" as having the same requirements as the term "mosaicing." This is in keeping with the parties' positions. Plaintiff contends the term should be construed as "images created by mosaicing." Joint Claim Terms Chart ("JCT"), Dkt. No. 38-2, 1. Defendant advocates for a different construction, but also tacitly admits that the definition of the term "mosaic imagery" is dependent on the definition of the term "mosaicing." Indeed, Defendant proposes identical definitions for the two terms—save for the insertion of the word "generating" as the first word in its proposed construction of "mosaicing."¹³ Accordingly, as both parties agree that the construction of "mosaic imagery" is dependent on the construction of the term "mosaicing," and the Court has rejected Defendant's narrower construction of the term "mosaicing," the Court adopts Plaintiff's simpler and more accurate construction. For all these reasons, the Court construes "mosaic imagery" as "images created by mosaicing." For the same reasons, the Court construes the term "mosaic images" as "images created by mosaicing."

Having construed those three terms, the following terms do not require construction: "mosaic imagery along the [first] [second] view," "mosaicing the selected outputs of cameras in the [first] [second] view;" "mosaicing the first image with the second image and then mosaicing the

¹³ Defendant proposes that "mosaicing" be construed as "generating a seamless image generated by combining two or more overlapping images that were captured at different camera locations," and that mosaic imagery be construed as "a seamless image generated by combining two or more overlapping images that were captured at different camera locations." JCT at 1.

second image with the third image,” and “displaying the first, second, third and mosaic images in sequence to obtain a seamless view through the environment.” Those terms do not require independent construction as their meaning is fully determined and unambiguous in light of the Court’s construction of the terms “mosaicing,” “mosaic imagery,” and “mosaic images.”

C. “Tweening” and Dependent Terms

Plaintiff’s Proposed Construction: “generating synthetic imagery from acquired imagery to show movement and transition between the acquired imagery.”

Defendant’s Proposed Construction: “creating an interpolated image in between two images captured at different camera locations by using local scene characteristics to monitor movement among the camera locations.”

For the reasons that follow, the Court construes the term “tweening” as “generating synthetic imagery from acquired imagery, and utilizing that synthetic imagery between the acquired imagery, in order to show movement and transition between the acquired imagery.”

The term “tweening” appears in the claims of the ‘325 and the ‘234 Patents. As with the term “mosaicing,” neither patent sufficiently articulates a system or process for “tweening” within the body of the patents. And both patents incorporate by reference another patent, here U.S. Patent No. 5,529,040 entitled, “Method for Determining Sensor Motion and Scene Structure and Image processing System” (the “Hanna Patent”). ‘234 Patent 17:64-18:2; ‘325 Patent 13:50-56. The Hanna Patent is expressly incorporated as one example of potentially applicable “tweening” methodologies. ‘234 Patent 17:64-18:2; ‘325 Patent 13:50-56 (“*One example* of the tweening process is disclosed in the [Hanna Patent]”) (emphasis added).

There is no contention that Plaintiff’s proposed construction of “tweening” is inherently inaccurate. Rather, Defendant again seeks to narrow Plaintiff’s proposed construction through the addition of three requirements: (1) that it involves the creation of an interpolated image; (2) which

is deployed between two images captured at different camera locations; and (3) uses local scene characteristics to monitor movement among the camera locations. For the reasons that follow, none of those requirements are supported by the intrinsic evidence—and Defendant’s construction is rejected. However, as Plaintiff’s proposed construction fails to adequately account for the inherent requirement that the synthetic imagery be utilized between the acquired imagery, the Court has modified Plaintiff’s construction as indicated above.

1. Synthetic v. Interpolated

The phrases “synthetic imagery” and “interpolated images” do not appear in the Asserted Patents. Indeed, both parties admit that their proposed constructions, in this respect, go beyond the language of the ‘234 and ‘325 Patents. Accordingly, the Court will evaluate the usage of these proposed terms in light of the intrinsic evidence, the ordinary meaning of the terms, and extrinsic evidence, to the extent that extrinsic evidence is germane and does not contradict the intrinsic evidence.

The Court begins with a preliminary analysis of the term itself. “Tweening,” strongly implies a link to the phrase “in between.” This construction is supported by the description of a “tweening” process in the preferred embodiments of the ‘234 and 325 Patents. That process is described, in pertinent part, as an iterative process, one step of which is described as “warping one of the outputs toward the other output using the current estimates of the models at the given image resolution.” ‘234 Patent, 18:31-33; ‘325 Patent 14:18-20. That language supports the Court’s observation that “tweening” is linked to the phrase “in between” in that it describes a process by which imagery is created and utilized to facilitate a transition between existing imagery. *See* Hanna Decl. at ¶ 34 (“One of ordinary skill in the art would recognize the following definitions . . . **Inbetweeing or *tweening*.** . . .”) (emphasis in original). The pertinent language of both

proposed constructions (“synthetic imagery” and “interpolated image”), moreover, is consistent with that description.

In light of that analysis, the Court turns to the proposed constructions themselves. The phrases “generating synthetic imagery . . . to show movement and transition between the acquired imagery” and “creating an interpolated image in between two images” have similar meanings. Both involve the creation of new imagery to link images. However, Defendant’s proposed construction is more restrictive in that it requires a singular interpolated image to be inserted between the two images to be “tweened.”

The use of the singular “an image” in Defendant’s proposed construction calls for the insertion of a singular interpolated image. That requirement is somewhat in tension with the iterative “tweening” process described in the specifications of the ‘234 and ‘325 Patents. It may be that Defendant’s construction calls for the use of a singular interpolated image during each iterative cycle, but it also could be interpreted to limit the “tweening” process to the insertion of one interpolated image—in contrast to the described iterative process. The Court is also concerned that Defendant’s proposed utilization of the term “interpolated” may require, without justification from the intrinsic evidence, that an interpolated image be composed of pixels from each acquired image to be “tweened.” Accordingly, the intrinsic evidence is, at least somewhat, in tension with Defendant’s proposed construction.

However, as the intrinsic evidence presented is insufficient to fully resolve this issue, the Court looks to the extrinsic evidence to determine the ordinary meaning of these terms, as understood by a POSITA. Dr. Hanna, the listed inventor of the Hanna Patent, has opined that the synthetic imagery is a broad term, which encompasses the full scope of image generation that a POSITA would understand “tweening” to entail. Sup. Decl. of Keith Hanna, ¶10. Dr. Hanna has further opined that interpolation is but one method “to generate synthetic imagery to show

movement and transition between other imagery” but that there are other potentially applicable techniques that accomplish the same goal. *See id.* ¶ 34. From this extrinsic evidence, the Court has determined that Defendant’s construction is a narrowing of the understanding of a POSITA—despite the fact that Defendant has not adequately explained the impact of its proposed construction nor cited intrinsic evidence which supports that construction over Plaintiff’s. *Thorner v. Sony Computer Ent. Am. LLC*, 669 F.3d 1362, 1367 (Fed. Cir. 2012) (“The patentee is free to choose a broad term and expect to obtain the full scope of its plain and ordinary meaning unless the patentee explicitly redefines the term or disavows its full scope.”).

For all of these reasons, the Court finds Plaintiff’s construction more persuasive in this regard and that it more accurately reflects the understanding of a POSITA. However, the Court is troubled by the fact that Plaintiff’s proposed construction does not include a requirement that the synthetic imagery be deployed in between the acquired imagery, which a POSITA would understand to be part of the ordinary meaning of the term “tweening.” *See* Hanna Decl. at ¶ 34. Accordingly, the Court construes the term “tweening” largely in accord with Plaintiff’s construction, but inserts the phrase “and utilizing that synthetic imagery between the acquired imagery” into its construction.

2. “Images Captured at Different Camera Locations” and “Using Local Scene Characteristics”

The Court rejects both of these proposed restrictions, which Defendant contends should be included in the construction of the term “tweening,” as they are contradicted by the intrinsic evidence.

In asserting that “tweening” necessarily involves images captures at different camera locations, Defendant points to language in the specification of the ‘325 Patent which teaches that “tweening enables the server [] to process the structure of a view from two or more camera outputs of the view. *Opp.* at 21 (quoting ‘325 Patent, 13:56-57). There is no dispute that the

Asserted Patents teach the utility of “tweening” images acquired from different camera locations. However, in making this assertion Defendant fails to adequately account for Claim 11 of the ‘325 Patent, which specifically teaches a system in which “camera output[s]” and “additional source output[s]” are “mix[ed]” by “tweening” those outputs. ‘325 Patent 13:3-11. Indeed, the sole distinction between the system described in Claim 10 of the ‘325 Patent, and Claim 11 of that patent, is that Claim 11 allows for the tweening of non-camera source outputs. *Id.* at 22:38-23:11. Accordingly, while “tweening” camera outputs is certainly taught in the ‘325 Patent, the term “tweening” cannot be construed as requiring that the images to be “tweened” were necessarily acquired from different camera locations. *Seachange Int’l, Inc. v. C-COR, Inc.*, 413 F.3d 1361, 1368-69 (Fed. Cir. 2005) (observing that claim differentiation “stems from the common sense notion that different words or phrases used in separate claims are presumed to indicate that the claims have different meanings and scope,” and creates a “presumption that two independent claims have different scope when different words or phrases are used in those claims.”) (internal quotation marks and citations omitted).

As for the proposed requirement that “tweening” must involve the use of “local scene characteristics,” that proposed requirement is also clearly contradicted by the claims asserted in the ‘234 Patent.

6. The system of claim 1, wherein in the one or more processing elements are further configured to cause imagery of two or more different perspectives along the first view to be tweened to smooth navigation of the first user along the first view

7. The system of claim 6, wherein the tweening uses local scene characteristics of the environment.

‘234 Patent at 26:1-8. Accordingly, Defendant’s proposed requirement that tweening must involve the use of local scene characteristics would render the entirety Claim 7 of the ‘234 Patent

surplusage.¹⁴ As Defendant’s proposed requirement that local scene characteristics be utilized in the “tweening” process runs contrary to the doctrine of claim differentiation, and is, at best, contradicted by the intrinsic evidence, the Court rejects it.

3. Conclusion

For all these reasons, the Court construes the terms “tweening” to mean “generating synthetic imagery from acquired imagery and utilizing that synthetic imagery between the acquired imagery, in order to show movement and transition between the acquired imagery.”

As with the Court’s construction of “mosaic imagery,” the Court construes the term “tweened imagery” as having the same requirements as the term “tweening.” This is, again, in keeping with the parties’ positions. Plaintiff contends that the term should be construed as “images created by tweening.” JCT at 3. Defendant advocates for a different construction, but also tacitly admits that the definition of the term “tweened imagery” is dependent on the definition of the term “tweening.”¹⁵ Indeed, Defendant proposes identical definitions for the two terms—the only difference being the location and conjugation of the word “created.” See JCT at 3-4. Accordingly, as both parties agree that the construction of “tweened imagery” is dependent on the construction of the term “tweening,” and the Court has rejected Defendant’s broader construction of the term “tweening,” the Court adopts Plaintiff’s simpler and more accurate construction. For all these reasons, the Court construes “tweened imagery” as “images created by tweening.”

¹⁴ Defendant’s citation to the specification of the ‘325 Patent explaining how the Hanna Patent’s “tweening” process utilizes local scene characteristics is also unavailing because that reference is expressly described as merely “one example of the tweening process.” 325 Patent 13:50-66. see *Phillips v. AWH Corp.*, 415 F.3d at 1323 (while the Court must read the “claim[s] in light of the specification” the Federal Circuit has “repeatedly warned against confining the claims to those embodiments.”).

¹⁵ Defendant contends “tweening” should be construed as “creating an interpolated image in between two images captured at different camera locations by using local scene characteristics to monitor movement among the camera locations,” and “tweened imagery” as “an interpolated image in between two images captured at different camera locations created by using local scene characteristics to monitor movement among the camera locations.” JCT at 3.

Having construed those terms, the following terms do not require independent construction: “tweened;” “tweening the selected outputs of cameras in the [first] [second] path;” “tweening the image of a current camera in the sequence to the image of a next camera in the sequence;” “cause imagery on two or more different perspectives long the first view to be tweened;” “tweening imagery of two or more different perspectives along the first view;” and “tweening the first image with the second image to obtain a first tweened image and then tweening the second image with the third image to obtain a second tweened image.” Those dependent terms do not require independent construction as their meaning is unambiguous and fully determined in light of the Court’s construction of the terms “tweening” and “tweened imagery.”

D. “Array of Cameras”

Plaintiff’s Proposed Construction: Plaintiff contends that this term does not require construction. In the alternative, Plaintiff proposes that the term be construed as “a configuration of cameras, where such configuration can include movable cameras and reusing a camera in multiple locations.”

Defendant’s Proposed Construction: “a set of multiple cameras, each fixed to capture images at a different location, to provide a view through the environment without having to move any camera.”

For the reasons that follow, the Court construes the term “array of cameras” as “a set of multiple cameras, each fixed in relation to each other.”

The term “array of cameras” appears in claims of the ‘325 and ‘226 Patents. “Arrays of cameras” are at the heart of the those patents, which each self-describe themselves as teaching “a navigable camera array telepresence system[s] and method[s] of using same.” ‘325 Patent, 1:20-21; ‘226 Patent, 1:15-16. In its specification, the ‘325 Patent teaches a preferred embodiment of the invention which “uses modular, interlocking arrays of microcameras. The cameras are on rails

with each rail holding a plurality of cameras. These cameras, each locked in a fixed relation to every adjacent camera on the array and dispersed dimensionally in a given environment. . . .” ‘325 Patent 3:66-4:4. As Plaintiff has pointed out, however, the ‘325 and ‘226 Patents teach that an “array of cameras” can be arranged in nearly any configuration:

The array can take any shape. ‘226 patent, 7:23-25 (“the array 10 may be a linear array of cameras 14, a 2-dimensional array of cameras 14, a 3-dimensional array of cameras 14, or any combination thereof.”); ‘325 patent, 7:34-36 (same). The array can comprise separate, discrete groupings of cameras. ‘226 patent, Fig. 3; ‘325 patent, Fig. 3, 19:13 (“an array 12 may comprise a plurality of rings”). The array can be moveable. ‘226 patent, 7:31-33 (“array 10 can be secured to a moveable frame that can be wheeled into position in the environment”); ‘325 patent, 7:42-44 (same). The array can be sequentially positioning cameras through the environment, namely, a first group of cameras positioned at a first location in the environment to capture images, which are then moved, and a second group of cameras positioned at a second location to capture images. See ‘325 patent, Figs. 11, 12, 19:41-20:39, 19:53-59 (“Once the output for each camera 14 of array 12-1 is stored, cylindrical array 12-1 is removed from the environment (step 1240) If additional cylindrical arrays 12 are desired, the process repeats”), 19:64-67 (“Upon storing all of the outputs associated with the arrays 12-1 through 12-n, a user may navigate through the environment. Navigation is effectuated by accessing the input of the storage nodes”).

Br. at 14-15. In all of the multitude of configurations contemplated in the patents, however, the cameras in each array are always fixed in geometric relation to each other. As discussed below, the fixed geometric relationship between the cameras within an array is crucial to permitting users to navigate the environment captured by that array.

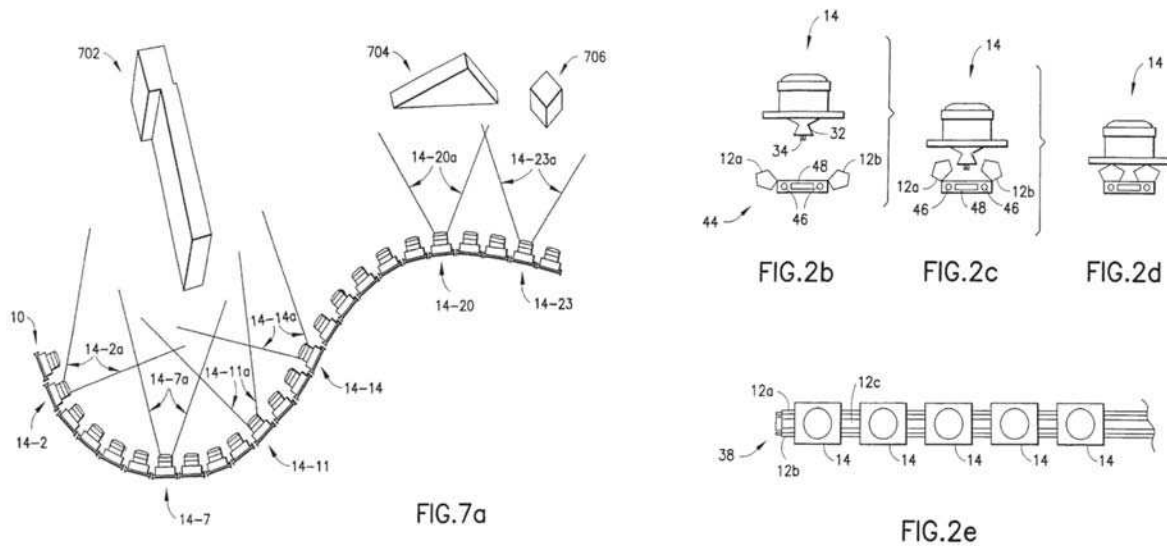
The ‘325 and ‘226 Patents devote substantial portions of their specifications describing the “arrays of cameras” to be used in various preferred embodiments. *E.g.* Br. at 14-15, above. The Court construes the language of the claims “in light of” those descriptions of the term “array of cameras.” *Phillips*, 415 F.3d at 1323 (Fed. Cir. 2005).

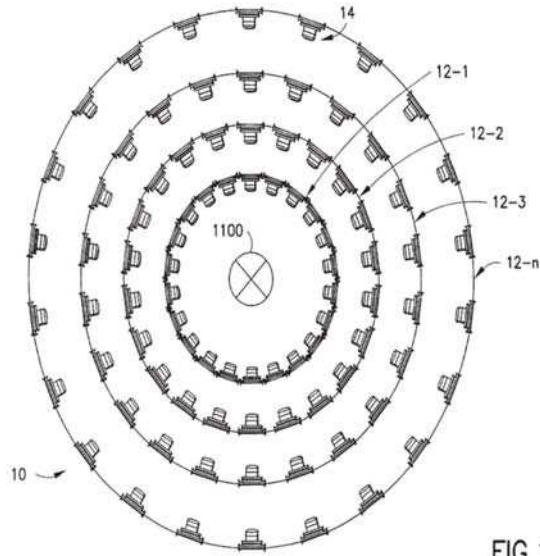
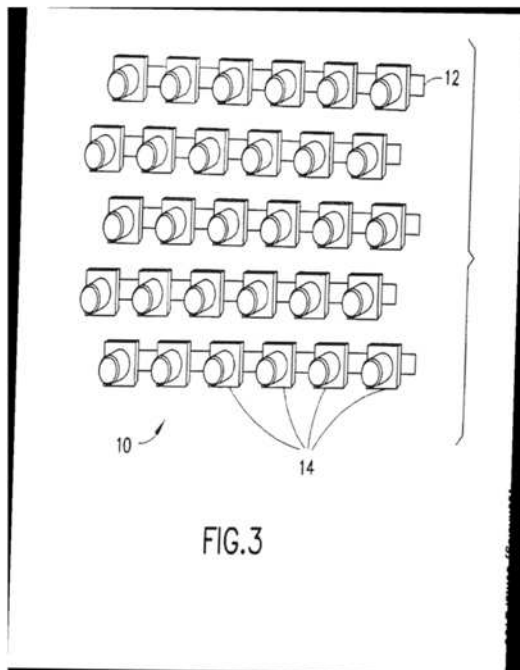
Both the ‘325 and ‘226 Patents describe themselves as addressing the need “for an improved telepresence system that provides the ability to better simulate a viewer’s actual presence in a venue, preferably in real time.” ‘325 Patent 2:61-63; ‘226 Patent 2:59-63. The Patents further

teach methods, systems and devices that allow multiple users to navigate the environment simultaneously and independently. *E.g.* ‘325 Patent, Claim 10, 226 Patent, Claim 55. Throughout the specifications and claims of those patents, that goal—to allow one or more users to virtually navigate an environment, preferably in real time—is consistently reflected in those patents’ description of “arrays of cameras” and visual representations of such arrays.

[i]t is to be understood that the array **10** provides several advantages. For example, because the array **10** employs a series of cameras **14**, no individual camera, or the entire array **10** for that matter, need be moved in order to obtain a seamless view of the environment. Instead, the user navigates through the array **10**, which is strategically placed though and around the physical environment to be viewed. Furthermore, because the cameras **14** of the array **10** are physically located at different points in the environment to be viewed, a user is able to view changes in perspective . . .

‘325 Patent 6:37-46;





As the above images indicate, the specifications of the '325 and '226 Patents consistently highlight how each camera in the array is fixed in relation to the other cameras in the array.

The claims of the '325 and '226 Patents are in accord with the description of “arrays of cameras” contained in the specifications. For example, in Claim 1 of the '325 Patent, the taught telepresence system includes “an array of cameras, each having an associated view of an environment and an associated camera output representing the associated view, the array including at least one camera path wherein each path is defined by a series of cameras having progressively different perspectives of the environment.” '325 Patent, Claim 1, 20:67-21:4. Claim 1 of the '226 Patent uses similar language: “an array of cameras including a first series of cameras defining the first path through the environment, wherein the cameras in the first series have progressively different perspectives of the environment along the first path, and a second series of cameras defining the second path through the environment, wherein the cameras in the second series have progressively different perspectives of the environment along the second path.” '226 Patent, Claim 1, 17:52-60. The fixed geometric relationship between the cameras in the array is central to

the use of the array—indeed that geometric relationship is how a path through the array of cameras can be defined. *See* Stevenson Dep., ¶ 127:6-11 (“in the ‘226, because you have this fixed array of cameras, you have the geometric relationship between new cameras known. That’s a data that is stored in the node that is used in mosaicing or tweening.”).¹⁶

Reading the claims in light of the specification, a POSITA would understand that, in these patents, an array of cameras means “a set of multiple cameras, each fixed in relation to each other.” Fixing the cameras into in relation to each other allows for for the creation of progressively different perspectives, which can be “mosaiced,” “tweened” or otherwise mixed or processed to allow a user to navigate images of the environment captured by the array. *See id.*

The critical nature of that fixed geometric relationship is further highlighted by the ‘325 Patents specification, which provides the only exemplar of the effect of modifying the cameras’ relationship to each other in the ‘325 or ‘226 Patents. As detailed below, when one or more cameras’ positions relative to each other is altered, the ‘325 Patent teaches that those alterations result in the creation of a separate and distinct array—emphasizing the requirement that within each array, the cameras’ relation to each other is fixed.

The ‘325 Patent teaches a telepresence system in which a cylindrical “array of cameras” is deployed, each camera’s image recorded, and then the array is removed from the environment. ‘325 Patent, Claim 22-24; *see id.* 19-5-20:27; Fig. 11, above. Each array comprises cameras fixed in relation to each other. As described in the ‘325 Patent, after the first array records images, it may be removed and a second array may be deployed. That second array then records images of the environment. As shown in Figure 11 of the ‘325 Patent, reproduced above, the utilization of

¹⁶ Dr. Stevenson later clarified that the quoted reference to the ‘226 Patent should instead refer to the ‘325 Patent.

As discussed below, the Court agrees with Dr. Stevenson that the cameras must be fixed in relation to each other, but disagrees that they must be fixed to individual locations in order to preserve the operational geometry about which Dr. Stevenson testified.

multiple removable arrays ultimately allows a user to navigate towards or away from the central object, without the internal arrays of cameras interfering with the user's shifting perspective.¹⁷ Consistent with every instance in which the term "array of cameras" is used in the Asserted Patents, each array contains cameras in fixed in relation to each other. The supplemental arrays, containing cameras in different geometric relationships with each other than in the initial array, are described as distinct from the first array and each other (i.e. array 12-1, array 12-2, array 12-n+1). From this, a POSITA would understand that the supplemental arrays are distinct and separate arrays because their constituent cameras do not have the same fixed geometric relationship as the cameras in the other arrays. This is the case even if after the removal of array 12-1, as pictured in Figure 11, the same cameras which were used in array 12-1 were repurposed to create array 12-2. Even in the event that arrays 12-1 and 12-2 utilized the same physical cameras, the geometric relationship between the cameras in arrays 12-1 and 12-2 are different, and so a POSITA would understand them to be different arrays.¹⁸

The system represented by Figure 11 is taught in Claim 22 of the '325 Patent, which further emphasizes that arrays with different geometric relationships between the constituent cameras are to be considered separate arrays. Claim 22 teaches a teaches telepresence system involving "a plurality of removable arrays" deployed at "different lengths" from the environment, which parallels the system discussed above and represented in Figure 11. The use of plural "arrays" is notable in Claim 22, as it is a departure from the more typical and singular phrase "an array of cameras" used elsewhere in the claims. *E.g.* '325 Patent, Claim 1, 4, 10, 13. The use of

¹⁷ The need to remove arrays from the environment and introduce new arrays may prevent or hinder real time navigation. However, the Court notes that the goal of real time navigation is expressed as a preference, not a requirement, in the '325 and '226 Patents. '325 Patent 2:61-63; '226 Patent 2:59-63.

¹⁸ The '325 Patent also teaches a system in which an array could be comprised of "a plurality of rings" bearing cameras. '325 Patent 19:13-14. However, even in that example, the cameras must still be fixed in relation to each other. A POSITA would not understand that an "array of cameras" must comprise a single structure, be it ring or rail, but would understand that whatever its form, the constituent cameras must be fixed in relation to each other.

plural “arrays” in Claim 22 highlights the requirement that the cameras in the array are fixed in relation to each other by emphasizing that when, as in Figure 11, the geometric relationship between the constituent cameras with an array changes, a new array is created. For all these reasons, a POSITA would understand an “array of cameras” to mean “a set of multiple cameras, each fixed in relation to each other.”

1. The Parties Proposed Constructions

Defendant’s proposed limitation—that the cameras be fixed at specific locations—goes too far, and is contradicted by the intrinsic evidence. This is illustrated by the following language from the ‘226 Patent:

These cameras, each locked in affixed relation to every adjacent camera on the array and dispersed dimensionally in a given environment

‘226 Patent, 3:56-65.

[T]he system uses the multiplicity of positioned micro cameras to move the viewer’s perspective

Id. 4:12-18. While that language highlights the Court’s construction—that each cameras’ relation to the other cameras in the array is fixed—it also demonstrates that less restrictive terms such as “positioned” and “dispersed” are used to describe the location of each camera. This is consistent with other embodiments discussed in the Asserted Patents, which teach, for example, that an array can be wheeled into position. Defendant’s proposed requirement that each camera must be fixed at a specific location is inconsistent with wheeling the array into position, or removing the array after it captures its images, both of which are taught, as disused above.

On the other hand, Plaintiff’s contention that the cameras can be moved or reused also goes too far and lacks intrinsic support. A careful review of the various configurations of “arrays of cameras” contemplated in the Asserted Patents provided reveals that there is not one single

example in the intrinsic evidence of an array of cameras in which the cameras are not fixed relative to each other. As discussed above, the cameras are carefully deployed to create the necessary fields of view. Were that not the case, a user, let alone multiple independent users, might not be able to navigate through the environment utilizing the array. Accordingly, a POSITA would understand that cameras that did not have “fixed” fields of view relative to the other cameras in the array would be contrary to the teachings of the ‘325 and ‘226 Patents. In this context, Plaintiff’s contention that cameras can be moved or reused is troubling. Moving a camera, without moving the entire array, would change its geometric relationship with the other cameras within the array, which, as explained above, would create a new array. Accordingly, the Court rejects Plaintiff’s contention that a camera within an array can be moved and still constitute the same array as it is divorced from the intrinsic evidence.

Plaintiff’s contention that cameras within an array can be reused is also rejected as overbroad. It is true that, from the perspective of a user of one of the claimed telepresence systems, a camera in an array may be reused in certain applications. For example, hypothetically, the user could navigate from camera A to camera B, and then back to camera A within the scope of the claimed inventions. However, if, in the example represented by Figure 11 above, a camera in array 12-1 were reused in array 12-2, array 12-1 and array 12-2 would still constitute separate and distinct arrays. Accordingly, the contention that a camera can be reused within an array as proposed by Plaintiff rejected as overbroad and likely to cause juror confusion.

Defendant’s proposed construction contains the additional requirement that an array of cameras “provide a view through the environment without having to move any camera.” The Court rejects that additional proposed requirement for the reasons that follow.

Defendant’s proposed requirement speaks to the function of the array. The Claims of the ‘325 and ‘234 Patents are replete with language which may limit those claims along the lines

proposed by Defendant. However, any such restriction is a function of the language of the claims as a whole, not the meaning of the term “array of cameras.” For example, Claim 1 of the ‘325

Patent teaches:

an array of cameras, each camera having an associated view of the environment and as associated camera output representing the associated view, the array including at least one camera path wherein each path is defined by a series of cameras having progressively different perspectives of the environment.

From that language, a POSITA would understand that in Claim 1 of the ‘325 Patent, the array of cameras must include cameras with perspectives which sequentially define at least one path through the environment. A POSITA would also understand that the various views associated with the cameras within the array must, in aggregate, provide a view through the environment without having to move any camera. However, that limitation is not imposed by the term “array of cameras.” Rather, it is imposed by the language following the term “array of cameras.” See *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (“the claim in this case refers to ‘steel baffles,’ which strongly implies that the term “baffles” does not inherently mean objects made of steel.”). As the limitations proposed by Defendant in the phrase “provide a view through the environment without having to move any camera” are best understood as limitations imposed by claim language surrounding the term “array of cameras,” rather than limitations intrinsic to the term “array of cameras,” the Court declines to import those terms into its construction.¹⁹

¹⁹ Despite the fact that both parties’ proposed constructions only speak obliquely to the issue, the Court understands that an ultimate issue in this case may be whether an array can capture images at one location, be moved to a second location where it again captures images, and still be considered the same array. Such a usage of an array is neither expressly articulated in the Asserted Patents nor disclaimed. See ‘325 Patent 2:15-38 (disclaiming prior art in which a user controls a camera mounted vehicle and admiring prior art in which a 360-degree camera was mounted on a moving vehicle). The Court need not, and does not, take a position on the issue of whether such a system or method is within the scope of the Asserted Patents at this time. However, to the extent any pertinent limitation exists, that limitation is not inherent in the term “array of cameras” as understood by a POSITA.

For all these reasons, the Court construes the term “array of cameras” as “set of multiple cameras, each fixed in relation to each other.”

E. Local Scene Characteristics

Plaintiff’s Proposed Construction: Plaintiff contends that this term does not require construction. In the alternative, Plaintiff proposes that the term be construed as “attributes of a local region.”

Defendant’s Proposed Construction: “information about the environment derived from imagery captured at different camera locations.”

For the reasons that follow, the Court construes the term “local scene characteristics” as “information about the environment.”

The term “local scene characteristics” appears in the claims of the ‘234 Patent. The pertinent claims, along with relevant sections of the claims on which they depend, are excerpted below.

1. A system for providing at least a first user with a first view of multiple locations through a remote environment and a second user with a second view of multiple locations through the environment . . . the system comprising:
one or more electronic storage devices;
one or more processing elements configured to . . .
store electronic imagery of progressively different perspectives of the environment having overlapping fields of view in the one or more electronic storage devices;
generate mosaic imagery from the electronic imagery of the environment

...

6. The system of claim **1**, wherein the one or more processing elements are further configured to cause imagery of two or more different perspectives along the first view to be tweened to smooth navigation of the first user along the first view; and in response to first user inputs, provide the tweened imagery to the first user interface device.

7. The system of claim **6**, wherein the tweening uses *local scene characteristics*.

...

13. A method of providing at least a first user with a first view through a remote environment, the method comprising: receiving from a first user interface device associated with the first user, first user inputs associated with viewing the environment along the first view;
Generating mosaic imagery from electronic imagery of the environment having overlapping fields of view

. . .

19. The method of claim **13**, wherein the method comprises:
Smoothing navigation of the first user along the first view by tweening imagery of two or more different perspectives along the first view; and
In response to first user input, provide the tweened imagery to the first user interface device.

20. The method of claim 19, wherein the tweening uses *local scene characteristics* of the environment.

(emphasis added).

The Court observes that Plaintiff’s proposed construction, “attributes of a local region,” and the base of Defendant’s proposed construction, “information about the environment,” appear to be nearly identical in meaning. However, Defendant’s proposed construction goes on to add two additional restrictions: (1) that the data must be derived from imagery, and (2) that the data must be gathered from different camera locations. Neither of those proposed restrictions is appropriate.

As to the proposed requirement that the data be gathered from different camera locations, that requirement is contrary to the intrinsic evidence. The term “local scene characteristics” appears only twice in the claims of the ‘234 Patent, both times in the context of using “tweening” “electronic imagery.” The parties have not requested that the Court construct the term “electronic imagery,” and the Court does not do so in this opinion. The Court observes, however, that the term “electronic imagery” is used in the ‘234 Patent to describe the images which are processed to facilitate navigation of an environment—as opposed to the ‘325 and ‘226 Patents which instead describe how an “array of cameras” would capture said imagery. Accordingly, the Court rejects

Defendant's contention that "local scene characteristics" must be derived from camera data, collected at different camera locations, as an inappropriate narrowing of the '234 Patent, which does not utilize camera specific language in its claims.²⁰

As to the proposed requirement that "local scene characteristics" be limited to data derived from imagery, that proposed limitation is contrary to the intrinsic evidence as understood by a POSITA. As indicated in the claim language quoted above, the term "local scene characteristics" is only used in the claims of the '234 Patent in the context of "tweening." Dr. Hanna, the inventor of the Hanna Patent which was incorporated by reference into the '234 Patent as an exemplar of "tweening" has testified that the Hanna Patent discloses local scene characteristics that are not "derived from imagery." Hanna Decl. ¶¶ 56 ,57, Hanna Supp. Decl. ¶¶ 41-42. Examples of such data include "scene structure and shape of a local region, such as the orientation and depth/range of a planar surface in a local region." *Id.*

Turning to the language of the Hanna Patent, which as described above is incorporated into the '234 Patent as an exemplar of "tweening," the Court notes that the Hanna Patent discloses the use of "image sensors" as opposed to cameras. This distinction is relevant because the Hanna Patent's use of the term "image sensor" is broader than the term "camera" in that it encompasses types of image sensors which are capable of capturing data other than light or its absence. Hanna Patent 11:67-12:3 ("Other image sensors include radar detectors, optical line sensors or other electromagnetic or sonic detectors or any other sources of signals."). The outputs from such sensors are not limited to the type of imagery generated by cameras. Accordingly, neither the intrinsic nor the extrinsic evidence support Defendant's proposed restriction that "local scene characteristics" must be derived from imagery.

²⁰ Even assuming, *arguendo* that the Court agreed with Plaintiff's contention that local scene characteristic must be gathered by a camera, that would still not justify the contention that local scene characteristics must be gathered at different camera locations.

As both of Defendant’s proposed restrictions have been rejected as contrary to the intrinsic evidence, the Court is left with two nearly synonymous potential constructions “attributes of a local region” and “information about the environment.” No party has suggested that those phrases have different meanings, and the Court does not understand there to be a dispute as to any differences between those phrases. However, Plaintiff’s proposed construction is disfavored because it repeats the word “local” in the construction of the term “local scene characteristics,” which renders the proposed construction somewhat circular and less informative. Furthermore, the phrase “region” is untethered from the Asserted Patents, while the term “environment” is a common term in the Asserted Patents, referring to the environment to be navigated by the telepresence system. *E.g.* ‘234 Patent, Claims 1, 7.

For all of these reasons, the Court construes the term “local scene characteristics” to mean “information about the environment.”

F. “Warping Imagery”

Plaintiff’s Proposed Construction: Plaintiff contends that this term does not require construction. In the alternative, Plaintiff proposes that the term be construed as “transforming the positions of pixels in imagery.”

Defendant’s Proposed Construction: “modifying an image captured at one camera location to bring the image closer to matching another image captured at a different camera location.”

For the reasons that follow, the Court holds that the term “warping imagery” is to be given its full ordinary meaning, and thus construes it to mean “warping imagery.”

The term “warping imagery” appears only twice in the claims of the Asserted Patents—specifically in Claims 5 and 21 of the ‘234 Patent. The pertinent sections of those claims are reproduced below:

the mixing includes . . . warping imagery of the first perspective of the environment toward imagery of the second perspective of the environment.

'234 Patent, Claim 5, 25:55-61;

The mixing including warping of imagery of one perspective of the environment towards imagery of another perspective of the environment along the first view.

'234 Patent, Claim 21, 27:56-59.

The related term “warping” also appears in the specification of the '325 Patent as part a described “tweening” process:

Warping one of the outputs towards the other output using the current estimates of the models at the given image resolution.

'325 Patent, 14:18-20.

Neither proposed construction adds any justifiable refinement to the ordinary meaning of the term “warping imagery.” Plaintiff’s expert contends, and Defendant’s expert does not contest, that the term “warping imagery” has an ordinary meaning that a POISITA would understand. *See* Reply at 9 (collecting citations). Nonetheless, Plaintiff’s alternative construction incorporates a reference to “pixels,” without citation to any support in the intrinsic evidence for the use of that word. On the other hand, Defendant’s proposed construction must also be rejected as it improperly attempts to incorporate a requirement of multiple camera locations into the '234 Patent, when the '234 Patents’ claims are devoid of any reference to the term “camera,” or requirements as to how the images to be processed were captured. And while Defendant’s proposed construction does add the concept of directionality to the term “warping imagery” through the phrase “towards another image,” that sense of directionality should not be construed as part of the term “warping imagery.” Rather, the directionality implicit in the utilization of the term “warping imagery” in the patents stems from the surrounding claim language, which as quoted above, consistently described the technology as “warping imagery . . . toward” other imagery. For all these reasons, the Court rejects both proposed constructions, and holds that the

term “warping imagery” is to be given its full ordinary meaning, and accordingly construes it as “warping imagery.”

G. “Perspective,” “Point Perspective” and Dependent Terms

Plaintiff’s Proposed Construction: Plaintiff contends that neither “perspective” nor “point perspective” requires construction. In the alternative, Plaintiff proposes that both terms be construed as “view from a location.”

Defendant’s Proposed Construction: Defendant contends that both terms should be construed as “camera location.”

For the reasons that follow, the Court construes both terms to mean “view from a location.”

One or both of these terms appears in the claims in all of the Asserted Patents. The Court notes that natural reading of the terms may lead to a presumption that that the term “point perspective” may have a different meaning than the term “perspective.”²¹ Both parties, however, agree the terms “perspective” and “point perspective” are to be construed as having the same meaning, and so the Court proceeds with that understanding.

The term “perspective” has a broad and commonly understood ordinary meaning. Plaintiff’s proposed construction, “view from a location” is well within that ordinary meaning. The first claims of the ‘234 and ‘325 Patents are instructive as to the usage of the terms within the Asserted Patents.

. . .store electronic imagery of progressively different perspectives of the environment having overlapping fields of view in the one or more electric storage devices.

‘234 Patent, Claim 1, 25:20-23.

²¹ “[D]ifferent words or phrases used in separate claims are presumed to indicate that the claims have different meanings and scope.” *Seachange Int’l*, 413 F.3d at 1368-69 (Fed. Cir. 2005).

an array of cameras, each camera having an associated view of the environment and as associated camera output representing the associated view, the array including at least one camera path wherein each path is defined by a series of cameras having progressively different perspectives of the environment.

‘325 Patent, Claim 1, 20:63-21:4

The claim language quoted above demonstrates an inherent flaw in Defendant’s proposed construction. In both of those claims, substituting the term “camera locations” for “perspectives” as Defendant proposes, is inappropriate. In the ‘234 Patent, doing so would incorporate camera location into claims which, as discussed in § II(B)(1)(b) above, do not otherwise reference the term camera. And in the ‘325 Patent, doing so would be, at best, highly awkward, as the phrase “cameras having progressively different camera locations of the environment” borders on the nonsensical.²² On the other hand, substituting “view from a location” into those same claims leads to logical outcomes within the ordinary meaning of the term.

The ‘325 Patent contains language which further clarifies the construction of the terms.

In certain applications, a user may also wish to navigate forward and backward through the environment, thereby moving closer to or further away from an object. Although it is within the scope of the present invention to use cameras with zoom capability, simply *zooming towards an object does not change the user’s image point perspective.*

‘325 Patent, 18:59-67 (emphasis added). As this language indicates, a zoom-capable camera can modify its field of view through the use of zoom without modifying its “point perspective.”

Accordingly, while a camera’s location and orientation may be relevant to determine a camera’s “perspective or “point perspective,” the use of features such as zoom is not. Those distinctions are encompassed in the term “view from a location” as applied to a specific camera, and are

²² Defendant’s proposed construction also fails to account for potential changes in the orientation of a camera unaccompanied by any change of that camera’s location, which might change the camera’s view from its location (excepting certain cases in which the camera utilizes a 360-degree lens). See ‘226 Patent 2:30-31 (“360-degree camera systems provide the user with a panoramic view from a single location.”).

inadequately accounted for in Defendant’s proposed construction. For all of these reasons, the Court construes the terms ‘perspective’ and ‘point perspective’ as ‘view from a location.’

The Court declines to construe the terms ‘different perspective;’ ‘prospectively different perspective(s);’ ‘different point perspective;’ ‘having an associated view of the environment from a progressively different point perspective;’ and ‘[first] [second] perspectives,’ as they are dependent terms whose meaning is unambiguous and fully determined in light of the Court’s construction of ‘perspective’ and ‘point perspective.’

H. Terms No Longer in Dispute.

In their original Joint Claim Terms Chart, the parties listed several terms whose construction they, at that time disputed, but which no longer appear to be in dispute. Those terms are ‘compositing imagery of the different perspectives of the environment along the first view;’ ‘compositing imagery of the first perspective of the environment and imagery of the second perspective of the environment;’ and ‘mixing the first image with the second image to produce a mixed image.’ As Defendant did not brief the construction of these terms, and Plaintiff contends they require no construction, the Court understands there is no dispute as to these terms, and so the Court declines to construct them.

In their Joint Claim Construction Statement, Dkt. No. 38, the parties agree to the construction of the following terms:

- ‘different places’ is to be construed as ‘locations in the environment that are different from one another;’
- ‘progressively different locations’ is to be construed as ‘locations that are progressively different from one another.’
- ‘progressively different associated view of the environment along a path’ is to be construed as ‘progressively different respective view of the environment from a different location along a path;’
- ‘view through the environment’ is to be construed as ‘view from progressively different locations within the environment;’ and
- ‘viewing the environment along the [first] [second] view’ is to be construed as ‘viewing from progressively different locations within the environment.’

The Court understands there to be no dispute as to the construction of those terms and adopts the parties' agreed upon constructions of them.

III. INDEFINITENESS

Defendant contends that Claims 5 and 14 of the '325 Patent, as well as Claims 91 and 94 of the '226 Patent are indefinite. For the reasons that follow, all of those claims, “viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014). Accordingly, they are not indefinite.

A. Standard

One facet of the validity of a patent concerns the definiteness of its claims; summarily speaking, an indefinite claim is an invalid claim. *See generally* 35 U.S.C. § 112. “Indefiniteness is a matter of claim construction, and the same principles that govern claim construction are applicable to determining whether allegedly indefinite claim language is subject to construction.” *Praxair, Inc. v. ATMI, Inc.*, 543 F.3d 1306, 1319 (Fed. Cir. 2008) (quoting *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1348 (Fed. Cir. 2005)). Like claim construction, the question of indefiniteness is a question of law for the Court. *ePlus, Inc. v. Lawson Software, Inc.*, 700 F.3d 509, 517 (Fed. Cir. 2012). Under 35 U.S.C. § 112, every patent must contain claims that set out what “the applicant regards as his invention”—this is, in effect, “a public notice function, ensuring that the patent specification adequately notifies the public of the scope of the patentee’s right to exclude.” *Praxair*, 543 F.3d at 1319.

While patents need not set forth the parameters of an invention with complete precision— “[s]ome modicum of uncertainty . . . is the price of ensuring the appropriate incentives for innovation”—a patent “viewed in light of the specification and prosecution history, [must] inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus, Inc. v.*

Biosig Instruments, Inc., 134 S.Ct. 2120, 2128-29 (2014) (internal quotation marks and citations omitted). The *Nautilus* court clarified that a patent claim is not definite simply because “a court can ascribe *some* meaning to a patent’s claims” in a *post hoc* review, *id.* at 2130, and it is thus “not enough . . . to identify *some standard* for measuring the scope of the phrase,” *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370–71 (Fed Cir. 2014) (internal quotation marks and citations omitted). To withstand definiteness review, a claim must contain objective boundaries to provide sufficient notice to those of skill in the art to understand the invention. *Id.* at 1371; *Berkeheimer v. HP Inc.*, 881 F.3d 1360, 1364 (Fed. Cir. 2018). While claim terms can be defined by way of examples in the specification, the use of examples will not always provide a sufficiently definite boundary. *Interval Licensing*, 766 F.3d at 1373-74 (citing *Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d 1325, 1336 (Fed. Cir. 2010)).

In sum, [a] lack of definiteness renders the claims invalid,” *Berkeheimer*, 881 F.3d at 1363 (citing *Nautilus*, 134 S.Ct. at 2125), and where “a skilled artisan is still left to wonder what other forms” of the device in question fall into the ambit of the inventor’s patent, a claim is not sufficiently definite to inform the relevant audience the scope of what the inventor has reserved the right to exclude. *Interval Licensing*, 766 F.3d at 1374. Defendant bears the burden to prove any fact supporting its challenge by clear and convincing evidence.²³ *Microsoft Corp. v. i4i Ltd. P’ship*, 564 U.S. 91, 111 (2011).

B. Claims 5 and 14 of the ‘425 Patent

Claims 5 and 14 of the ‘325 Patent contain the phrase “each camera in the sequence having a different point perspective and a field of view that overlaps that of an adjacent cameras.”

²³ While patents may only be invalidated on clear and convincing evidence, “[m]any claims of invalidity rest . . . not upon factual disputes, but upon how the law applies to facts as given,” and thus “[w]here the ultimate question of patent validity turns on the correct answer to legal questions,” the clear and convincing evidence standard “has no application.” *Microsoft Corp. v. i4i Ltd. P’ship*, 564 U.S. 91, 114 (2011) (Breyer, J., concurring).

Defendant contends that the mismatch between the singular “an” and the plural “cameras” renders these claims indefinite. However, one skilled in the art would not be confused by this phrase, for the reasons that follow.

The use of the singular “an” and plural “cameras” appears to be a drafting error. However, both reasonable constructions of the phrase lead to the same outcome, preventing confusion. If the phrase is read as concluding with “a field of view that overlaps that of an adjacent camera,” then the condition—overlapping—is satisfied if the field of view overlaps with one, or more, adjacent cameras.

On the other hand, if the phrase is construed as concluding with “a field of view overlapping those of adjacent cameras” the condition—again overlapping—is satisfied if the field of view overlaps with all adjacent cameras. Accordingly, in this construction, the condition is again satisfied by overlap with multiple cameras, if the camera is adjacent to multiple cameras, or one camera, if the camera is only adjacent to one camera.²⁴

As both of the two plausible constructions have the same meaning, one skilled in the art can determine, with “reasonable certainty” what is claimed, despite the error in drafting. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014). Accordingly, these claims are not indefinite.

C. Claims 91 and 94 of the ‘226 Patent

Claim 94 of the ‘226 Patent is dependent on Claim 91. Those claims are excerpted, in pertinent part, below.

91. A device for providing a user with a display of an environment in response to user inputs, the system comprising:
An array of cameras . . .

. . .

²⁴ Another example of this grammatical construct is the sentence: “Please invite your neighbors to dinner.” If the subject of the sentence has multiple neighbors, she should invite them all. But if the subject has only one neighbor, the sentence is not incorrect or unclear. The subject should then invite her one neighbor to dinner.

94. The system of claim **91** . . .

Claim 91 contains what appears to be another typographical error, as the preamble of Claim 91 describes itself as both a device and a system. Defendant contends that, as a result, both Claim 91 and 94 are indefinite, as a person of skill in the art could not reasonably determine whether the claim is as to a device or a system. This issue is compounded by the fact that Claims 92 and 93 refer back to Claim 91 using the antecedent preamble, “the device of claim **91**,” while Claims 93-97 refers to “the system of claim **91**.”

The use of the terms “device” and “system” within Claim 91, however, does not render it or any other claim indefinite. Claim 91 contains both a reference to being a device and a system. Accordingly, the claims dependent on Claim 91 find antecedent support in Claim 91 regardless of whether they refer to a system or a device. As the link between Claim 91 and its dependent claims remains intact, the Court turns to the question of whether a person skilled in the art would be unable to determine the scope of the invention with “reasonable certainty” given the usage of both the terms “device” and “system” in the preamble of Claim 91. *Nautilus*, 134 S.Ct.at 2128-29.

A person of reasonable skill in the art would not be confused or uncertain as to the scope of the invention due to the inconsistent use of the words “device” and “system.” Indeed, Defendant has failed to advance any argument or to adduce any evidence as to the difference between a system and a device in the context of these claims.²⁵ Nor does the ‘226 Patent intrinsically define the terms “device” and “system” such that there is an inherent conflict between the two. Rather, each word relates to a patentable “machine.” 35 U.S.C. § 101.

²⁵ The Court observes that while the word “device,” in the abstract, could be understood to be a somewhat narrower than “system,” as used in the ‘226 Patent the term “device” is at least broad enough to encompass “an array of cameras” along with “a processing element,” ‘226 Patent Claim 73, 22:54-65, further demonstrating the lack of meaningful differentiation between the terms in the ‘226 Patent.


Turning to the structure of Claim 91, the Court observes that the words device and system, beyond indicating that the Claim relates to a machine, are not highly descriptive of the nature of the invention claimed. Rather, the invention claimed is defined by the descriptive portion of the preamble “for providing a user with a display of an environment in response to user inputs,” and the following descriptive sections which detail the array of cameras, memory storage capacity, and processing element(s) which comprise the claimed invention, and which give meaning to the terms “device” and “system.” Accordingly, a person skilled in the art would be able to understand what was claimed with reasonable certainty despite this error. For all these reasons, these claims are not indefinite.²⁶

IV. CONCLUSION

For the reasons that follow, the Court construes the disputed terms as described above, and as summarized in Attachment A.

SO ORDERED.

Dated: July 29, 2019
New York, New York



GREGORY H. WOODS
United States District Judge

²⁶ Defendant has not advanced a construction of any of the claims which the Court has reviewed for indefiniteness, nor contended that they require construction beyond a determination as to definiteness. Plaintiff contends they need no further construction. Accordingly, as the Court has resolved the dispute as to definiteness, and there is no remaining dispute as to construction, the Court declines to further construct said claims.

ATTACHMENT A

CLAIM CONSTRUCTION

Term	Construction
Mosaicing	Creating imagery assembled from a plurality of images, or portions thereof, including an alignment process and a composition process
Mosaic imagery	Images created by mosaicing
Mosaic images	Not independently construed as there is no dispute as to its meaning which is unresolved in light of the construction of the terms on which this term depends
Mosaic imagery along the [first] [second] view	Not independently construed as there is no dispute as to its meaning which is unresolved in light of the construction of the terms on which this term depends
Mosaicing the selected outputs of cameras in the [first] [second] view	Not independently construed as there is no dispute as to its meaning which is unresolved in light of the construction of the terms on which this term depends
Mosaicing the first image with the second image and then mosaicing the second image with the third image	Not independently construed as there is no dispute as to its meaning which is unresolved in light of the construction of the terms on which this term depends
Displaying the first, second, third and mosaic images in sequence to obtain a seamless view through the environment	Not independently construed as there is no dispute as to its meaning which is unresolved in light of the construction of the terms on which this term depends
Tweening	Generating synthetic imagery from acquired imagery, and utilizing that synthetic imagery between the acquired imagery, in order to show movement and transition between the acquired imagery
Tweened imagery	Images created by tweening
Tweened	Not independently construed as there is no dispute as to its meaning which is unresolved in light of construction of the terms on which this term depends
Tweening the first image with the second image to obtain a first tweened image and then tweening the second image with the third image to obtain a second tweened image	Not independently construed as there is no dispute as to its meaning which is unresolved in light of construction of the terms on which this term depends
Tweening the selected outputs of cameras in the [first] [second] path	Not independently construed as there is no dispute as to its meaning which is unresolved in light of construction of the terms on which this term depends

Tweneing the image of a current camera in the sequence to the image of a next camera in the sequence	Not independently construed as there is no dispute as to its meaning which is unresolved in light of construction of the terms on which this term depends
Cause imagery on two or more different perspectives long the first view to be tweened	Not independently construed as there is no dispute as to its meaning which is unresolved in light of construction of the terms on which this term depends
Tweneing imagery of two or more different perspectives along the first view	Not independently construed as there is no dispute as to its meaning which is unresolved in light of construction of the terms on which this term depends
Array of cameras	A set of multiple cameras, each fixed in relation to each other
Local scene characteristics	Information about the environment
Warping imagery	Warping imagery
Perspective	View from a location
Point perspective	View from a location
Different perspective	Not independently construed as there is no dispute as to its meaning which is unresolved in light of construction of the terms on which this term depends
progressively different perspective(s)	Not independently construed as there is no dispute as to its meaning which is unresolved in light of construction of the terms on which this term depends
different point perspective	Not independently construed as there is no dispute as to its meaning which is unresolved in light of construction of the terms on which this term depends
having an associated view of the environment from a progressively different point perspective	Not independently construed as there is no dispute as to its meaning which is unresolved in light of construction of the terms on which this term depends
[first] [second] perspectives	Not independently construed as there is no dispute as to its meaning which is unresolved in light of construction of the terms on which this term depends
Compositing imagery of the different perspectives of the environment along the first view	Not construed as its meaning is no longer in dispute.
Compositing imagery of the first perspective of the environment and imagery of the second perspective of the environment	Not construed as its meaning is no longer in dispute
Mixing the first image with the second image to produce a mixed image	Not construed as its meaning is no longer in dispute
Different places	Locations in the environment that are different from one another
Progressively different locations	Locations that are progressively different from one another
Progressively different associated view of the environment along a path	Progressively different respective view of the environment from a different location along a path

View through the environment	View from progressively different locations within the environment
Viewing the environment along the [first] [second] view	Viewing from progressively different locations within the environment

INDEFINITENESS

Claim Language	Finding
“each camera in the sequence having a different point perspective and a field of view that overlaps that of an adjacent cameras.”	Not indefinite
“ 91 . A device for providing a user with a display of an environment in response to user inputs, the system comprising: An array of cameras . . . The system of claim 91 . . .”	Not indefinite