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Cc: Kristie Davis
Subject: Preliminary Constructions for Align Technology, Inc. v. 3Shape A/S et al - 6:20-cv-979

EXTERNAL SENDER

Counsel,

The Court provides the following preliminary constructions in advance of your 8/20/2021 9:00 AM Markman hearing. The purpose of preliminary constructions is to streamline the hearing by providing the parties an indication of the Court's current position for each term. Although the parties are, of course, free to argue for their originally proposed construction, it is generally unlikely that the Court will select a party's originally proposed construction over the preliminary construction. As such, the Court believes that making arguments to fine-tune the preliminary construction may be more helpful. The preliminary constructions are not final as the Court may change some those constructions based on the arguments at the hearing.

Of the below terms, please let me know what terms each side would like to argue by 8:00 AM on 8/20/2021. Each side may email their list separately (but please CC the other side) or jointly (please indicate which side, or both, wants to argue each term). Also, by 8:00 AM, please submit any slides the parties (and CC the other side) wish to use at the Markman hearing.

To assist the court reporter (CC-ed), please email them a copy of your slides as soon as possible (it's okay if it's just a draft). When you email them, no need to CC the other side or the Court.

See you tomorrow.

Align Patents:

**For the Issue A terms below, the Court will hear argument on whether color data and depth data must be obtained independently of one another. Thus, the preliminary constructions for the Issue A terms resolve the secondary disputes, but do not resolve the primary "obtained independently" dispute.*

Term	Align's Proposed Construction	3Shape's Proposed Construction	Court's Preliminary Construction
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<p>[A.1] “depth data”</p> <p>'433 patent, claims 1, 2, 12, 13, 16</p> <p>'519 patent, claims 1, 6, 13, 21, 24</p> <p>'151 patent, claims 1, 10, 18, 25</p> <p>'152 patent, claims 1, 9, 16, 23</p>	<p>Plain and ordinary meaning, which is “data related to the three-dimensional properties of the scanned object</p>	<p>“3D surface points obtained independently of the color data”</p>	<p>Plain and ordinary meaning</p>
<p>[A.2] “scanning system configured to provide depth data of (said/the) portion”</p> <p>'519 patent, claims 1</p>	<p>Plain and ordinary meaning</p>	<p>“scanning system configured to obtain depth data independently of the color data of the portion”</p>	<p>[No preliminary construction provided]</p>
<p>[A.3] “imaging system configured to provide (two-dimensional) color image data of (said/the) portion”</p> <p>'519 patent, claims 1, 13, 24</p>	<p>Plain and ordinary meaning</p>	<p>“imaging device that uses colored illumination (<i>i.e.</i>, white light or sequential red, green, blue illumination) to obtain two-dimensional color image data independently of depth data of the object”</p>	<p>Plain and ordinary meaning</p>
<p>[A.4] “image gathering member to generate depth data of the structure portion”</p> <p>'433 patent, claims 1, 12,</p>	<p>Plain and ordinary meaning, which is “an imaging system with a plane substantially perpendicular to the optical axis” and not subject to § 112 P. 6, but if subject to § 112 P.6:</p> <ul style="list-style-type: none"> Function: “to generate depth data of the structure portion (corresponding to a two-dimensional reference array substantially orthogonal to depth direction)” <p>Structure: “scanning system that relies on</p>	<p>Subject to § 112 P.6</p> <ul style="list-style-type: none"> Function: “to generate depth data of the structure portion (corresponding to a two-dimensional reference array substantially orthogonal to a depth direction)” <p>Structure: “scanning system comprising laser(s) coupled to a grating/microlens array, telecentric confocal optics, image sensor, processor to determine the maximum intensity of the light returned from illuminated spots at</p>	<p>Not subject to §112 ¶6. Plain and ordinary meaning.</p>

	arrangement, including an illumination source, main optics to measure the depth direction, detection optics such as an image sensor, and a processor” see, e.g., ’433 patent at 3:3-67, 5:3-5, 13:14-23, 14:56-16:52, 24:30-35, Fig. 1, Fig. 4A, Fig. 8, Fig. 11, Fig. 12, Fig. 13	telecentric confocal optics. Does not acquire color data (i.e., full spectrum of light required to generate color)” see, e.g., ’433 patent, at 3:3-67, 5:3-5, 14:56-16:52, 24:30-35; Fig. 1, Fig. 4A, Fig. 8, Fig. 11, Fig. 12, Fig. 13	
[A.5] “color data (of the intraoral structure)” ’151 patent, claims 1, 18 ’152 patent, claims 1, 9, 16, 18, 23, 25 “color image data” ’519 patent, claims 1, 6, 13, 24 ’151 patent, claims 1, 10, 18, 25 ’152 patent, claims 9	“color data of the intraoral structure”: Plain and ordinary meaning, but if construction is required: “data that represents the color of the intraoral structure captured by the sensor” “color data”: Plain and ordinary meaning “color image data”: Plain and ordinary meaning	“color data of the intraoral structure”: “data that represents the color of the intraoral structure obtained independently of the depth data” “color image data”: “image data representing the color of the three-dimensional object obtained independently of depth image data”	Plain and ordinary meaning
[A.6] “two-dimensional image data” ’433 patent, claims 12, 13 “two-dimensional (first/second) image data” ’433 patent, claims 1, 2	Plain and ordinary meaning	“two-dimensional image data”: “two-dimensional image data used to generate color independently of depth data” Two-Dimensional (First/Second) Image Data: “(first/second) two-dimensional image data used to generate color independently of depth data”	Plain and ordinary meaning
[A.7] “depth image data” ’151 patent, claims 1, 10, 18, 25 ’152 patent, claim 9	Not indefinite; “the image data used to derive depth data”	Indefinite; if not indefinite: “depth image data obtained independently of color image data”	Plain and ordinary meaning

<p>[B.1] “map the estimated image data to the depth data for the two-dimensional reference array”</p> <p>'433 patent, claim 1</p>	<p>Plain and ordinary meaning</p>	<p>“match estimated color values at X-Y coordinates to substantially the same X-Y coordinates of the depth data”</p>	<p>Plain and ordinary meaning</p>
<p>[B.2] “selectively map the image data to the depth data for the two-dimensional reference array based on the plurality of focal lengths and the depth data such that the resulting associated color of the structure portion is in focus relative to the structure portion for a plurality of distances in the depth direction”</p> <p>'433 patent, claim 12</p>	<p>Plain and ordinary meaning</p>	<p>“selectively match color values at X-Y coordinates to substantially the same X-Y coordinates of the depth data based on the plurality of focal lengths and the depth data such that the entire wavelength composition of color is in focus relative to the structure portion for more than one distance in the depth direction”</p>	<p>Plain and ordinary meaning</p>
<p>[B.3] “processor...configured to associate the depth data with the two-dimensional color image data”</p> <p>'519 patent, claim 1</p>	<p>Plain and ordinary meaning</p>	<p>“processor...configured to match depth data at X-Y coordinates to substantially the same X-Y coordinates of the two-dimensional color image data”</p>	<p>Plain and ordinary meaning</p>
<p>[B.4] “color three-dimensional numerical entity”</p> <p>'151 patent, claims 1, 10, 11, 18, 25 '152 patent, claims 1, 9, 23</p>	<p>“numerical entity created by associating coordinates of color data to coordinates of depth data”</p>	<p>“new numerical entity created by matching X-Y coordinates of the color data to substantially the same X-Y coordinates of the independently obtained depth data”</p>	<p>“numerical entity created by associating coordinates of color data to coordinates of depth data”</p>
<p>[C.1] “illumination unit configured to transmit a first array of incident light along a path towards the threedimensional structure”</p> <p>'519 patent, claims 1, 13, 24</p>	<p>“illumination unit”: not subject to § 112 ¶ 6, construed as “one or more optical elements that provide or condition light for illumination” If subject to § 112 ¶ 6:</p> <ul style="list-style-type: none"> • Function: “transmit a 	<p>“illumination unit”: subject to §112 ¶ 6:</p> <ul style="list-style-type: none"> • Function: “transmit a first array of incident light along a path towards a threedimensional structure” 	<p>Not subject to §112 ¶6 and not indefinite. Plain and ordinary meaning.</p>

	<p>light along a path towards the three-dimensional structure”</p> <ul style="list-style-type: none"> • Structure: “(1) one or more light emitter(s), semiconductor laser(s), or laser emitter(s) in conjunction with diffraction or refraction optics, grating, microlens array, or an optics expander; or (2) a plurality of light emitters, semiconductor lasers, or laser emitters; or (3) equivalents thereof” <p><i>See, e.g., 6:10-14, 15:30-43</i></p>	<ul style="list-style-type: none"> • Structure: “laser(s) optically coupled to a grating, microlens array” <p>“array of incident light”: Indefinite. If found not indefinite, “light incident on an object to form an array of spots”</p>	
<p>[C.2] “detector (configured) to measure intensity of each of a plurality of returned light”</p> <p>’519 patent, claims 1, 4, 13, 24, 30</p> <p>“measure intensity”</p> <p>’519 patent, claims 1, 30</p> <p>“returning light”</p> <p>’151 patent, claims 10, 25</p>	<p>“detector (configured) to measure intensity of each of a plurality of returned light”: not indefinite; plain and ordinary meaning; if construction is required: “detector configured to measure intensity of each of a plurality of returned directional projections of light that return along the path and from the threedimensional structure”</p> <p>“measure intensity”: “detect intensity of returned light”</p> <p>“returning light”: not indefinite; plain and ordinary meaning</p>	<p>“detector (configured) to measure intensity of each of a plurality of returned light”: indefinite; if found not indefinite: “detector configured to measure intensity of light returned from each illuminated spot that returns along the path and from the three-dimensional structure”</p> <p>“measure intensity”: no further construction required. See construction of “detector” limitations above.</p> <p>“returning light”: indefinite; if not indefinite: “light returned from illuminated spots...from the intra-oral structure”</p>	<p>Not indefinite; plain and ordinary meaning</p>

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