

UNITED STATES DISTRICT COURT  
DISTRICT OF MASSACHUSETTS

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METRIS U.S.A., INC.,	)	
METRIS N.V.,	)	
METRIS IPR N.V., AND	)	
3D SCANNERS LTD.,	)	
	)	
Plaintiffs,	)	CIVIL ACTION NO. 08-11187-PBS
	)	
v.	)	
	)	
FARO TECHNOLOGIES, INC.	)	
	)	
Defendant.	)	

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**MEMORANDUM AND ORDER**

October 22, 2009

Saris, U.S.D.J.

**I. INTRODUCTION**

This patent infringement case involves an optical scanner mounted on a multiply-jointed arm for scanning an object to produce three-dimensional (3D) data for the object which can then be used to construct a 3D model of the object. Plaintiffs Metris U.S.A., Inc., Metris N.V., Metris IPR N.V., and 3D Scanners Ltd. (collectively "Metris") hold U.S. Patent No. 6,611,617 ("the '617 patent") and U.S. Patent No. 7,313,264 ("the '264 patent"). Metris filed an action against defendant and counterclaimant Faro Technologies, Inc. ("Faro"), claiming that Faro's Laser ScanArm products infringe both the '617 patent and the '264 patent. Faro has filed counterclaims against Metris, asserting that Metris' patents are invalid and unenforceable, and that Faro is their

rightful co-inventor and co-owner. Faro also asserts counts alleging violations of the Sherman Antitrust Act, 15 U.S.C. § 1 et. seq., and Mass. Gen. Laws ch. 93A.

The parties ask the Court to construe disputed claim terms in the '617 and '264 patents under Markman v. Westview Instruments, Inc., 517 U.S. 370 (1996). At the Markman hearing on October 8, 2009, both sides introduced tutorials on the background technology. On behalf of Metris, Dr. Gregory D. Hager, Ph.D., a professor of computer science at Johns Hopkins University, provided a video tutorial. Faro's expert, Dr. Thomas R. Kurfess, Ph.D., a professor of mechanical engineering at Clemson University, also testified. Although the parties were able to agree on the constructions of most claim terms at the hearing, they were not in sync on the meaning of the claim term "synchronization signal."

## II. FACTUAL BACKGROUND<sup>1</sup>

The background section for the one remaining disputed claim term in the '617 patent draws heavily from the tutorials, as well as the Declaration of Professor Hager. We note at the outset that Professor Kurfess testified that he basically agreed with Professor Hager's tutorial. (Claim Construction Hr'g Tr. 59, Oct. 8, 2009.)

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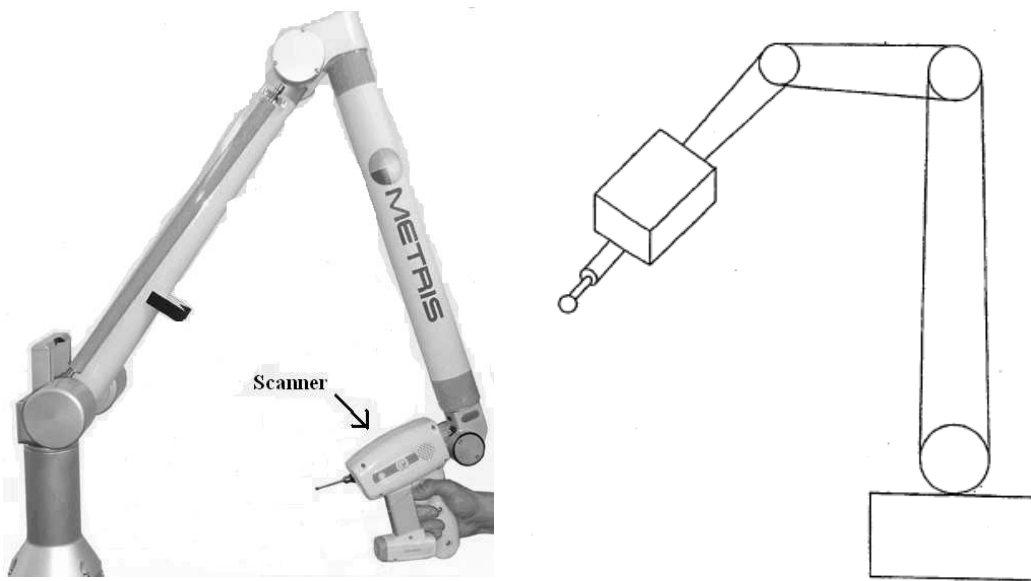
<sup>1</sup>The Court does not address the technology presented in the '264 patent or other disputed claims terms which were resolved at the hearing.

A coordinate measuring machine ("CMM") is a device for precisely measuring the geometric characteristics (i.e., the dimensions) of an object. Generally referred to as 3D digitizers or CMMs, the scanners that form the subject matter of this litigation are used to measure objects and create accurate digital or virtual three-dimensional replicas. This technology is utilized across numerous industries for purposes ranging from quality control to historical preservation. (P.'s Tech. Tutorial Ref. Book 15-19 ("P.'s Tut.").)

A "traditional" CMM has a probe arm that can travel along the length (X-axis), width (Y-axis), and height (Z-axis) of an object.<sup>2</sup> (Id. at 21.) The machine then uses the X-Y-Z coordinates of each of these points to determine the size and "pose" of the object. (Id.) "Portable" CMMs most commonly have "articulated" arms, like those shown below, which are multi-jointed and can move up, down, left, right, forward and backward, and can rotate about the three perpendicular axis of "orientation." (Id. at 26.)

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<sup>2</sup>A solid object can move and rotate in space. It occupies a "pose" in space which consists of a three-dimensional location and an orientation. Orientation has three dimensions called "roll, pitch and yaw." (P.'s Tut. 21.)



More recent CMMs feature innovations such as optical probes and scanners. A typical optical probe consists of a light source, a lens, and a light server. One common method of optical scanning is "laser triangulation," which is accomplished by projecting a laser line or point onto an object and then capturing the reflection with an optical sensor (e.g., a digital camera) located at a known distance from the laser's source. The resulting "reflection angle" can be interpreted to yield 3D measures of the part. With the help of a powerful digital signal processor, the digital image of the laser line can be processed to extract the information needed to generate 3D data reflecting the object. (Id. at 25.)

The invention claimed in the '617 patent has a "synch and trigger" feature. See Hager Decl. ¶ 6. In his tutorial,

Professor Hager described this feature as follows:

This claim teaches the process of synchronization of data obtained from the 3D scanner itself with position data obtained simultaneously from a multiply jointed articulated arm.

What the inventor of the '617 patent realized is that to function most effectively and accurately, a laser scanning system must combine measurements from two independent systems: first, the laser line scanner that is measuring points on the object surface as it is moved by the operator, and second, a multiply jointed arm (a CMM) that is measuring the position and orientation of the laser scanner with respect to a fixed point such as the base of the arm. Thus, when attached to the end of a multiply jointed arm, a laser scanner must coordinate, or synchronize, with the arm so that the position of the arm (and thus the scanner) is dynamically recorded at exactly the same time as the scanner seeks a measurement.

(Id. at 33-34.) The "synchronization signal" used in the synch and trigger feature set forth in Claim 1 of the '617 patent is at the heart of the present dispute.

### III. DISCUSSION

#### A. The Standard

To decide a patent infringement case, a court must determine the meaning of the claim terms. The interpretation of claim terms is "exclusively within the province of the court."

Markman, 517 U.S. at 372. In construing a claim, the Court must first "look to the words of the claims themselves . . . to define the scope of the patented invention." Vitronics Corp. v.

Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996). The language of the patent claims should be given first priority in the patent construction process because "the claims of a patent define the invention to which the patentee is entitled the right to exclude." Phillips v. AWH Corp., 415 F.3d 1303, 1312 (Fed. Cir. 2005) (*en banc*) (quoting Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc., 381 F.3d 1111, 1115 (Fed. Cir. 2004)).

Terms in the patent claims "are generally given their ordinary and customary meaning." Vitronics, 90 F.3d at 1582. The Federal Circuit has held that "the ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention." Phillips, 415 F.3d at 1313. This "inquiry into how a person of ordinary skill in the art understands a claim term provides an objective baseline from which to begin claim interpretation." Id.

In interpreting a given claim term, the Court looks to all intrinsic evidence. The Court consults the claims themselves, which "provide substantial guidance as to the meaning of particular claim terms." Id. at 1314. By examining "the context of the surrounding words of the [disputed] claim," an interpreter may properly comprehend and "determin[e] the ordinary and customary meaning of those [disputed] terms." ACTV, Inc. v. Walt

Disney Co., 346 F.3d 1082, 1088 (Fed. Cir. 2003). "When construing claims . . . the intrinsic evidence and particularly the claim language are the primary resources." Kara Tech. Inc. v. Stamps.com Inc., No. 09-1027, 2009 U.S. App. LEXIS 21120, at \*14 (Fed. Cir. Sept. 24, 2009).

Additionally, claims "must be read in view of the specification, of which they are a part." Phillips, 415 F.3d at 1315 (quoting Markman v. Westview Instruments, Inc., 52 F.3d 967, 978 (Fed. Cir. 1995)). The "specification 'is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.'" Id. (quoting Vitronics, 90 F.3d at 1582). Nevertheless, it is important to remember that "[t]he claims, not specification embodiments, define the scope of the patent protection." Kara Tech. Inc., 2009 U.S. App. LEXIS 21120, at \*13.

The Court "should also consider the patent's prosecution history, if it is in evidence." Markman, 52 F.3d at 980. "Like the specification, the prosecution history provides evidence of how the [Patent and Trademark Office] and the inventor understood the patent." Phillips, 415 F.3d at 1317. However, prosecution histories "often lack[] the clarity of the specification and thus [are] less useful for claim construction purposes." Id.

However, "[w]hile claims often receive their interpretative

context from the specification and the prosecution history, courts may not read limitations into the claims." Rambus Inc. v. Infineon Techs. AG, 318 F.3d 1081, 1088 (Fed. Cir. 2003) (citing Comark Commc'ns, Inc. v. Harris Corp., 156 F.3d 1182, 1186 (Fed. Cir. 1998)). Courts must not import "limitations from the specification into the claims absent a clear disclaimer of claim scope." Andersen Corp. v. Fiber Composites, LLC, 474 F.3d 1361, 1373 (Fed. Cir. 2007) (citing Gillette Co. v. Energizer Holdings, Inc., 405 F.3d 1367, 1375 (Fed. Cir. 2005)). Additionally, "when a patent claim 'does not contain a certain limitation and another claim does, that limitation cannot be read into the former claim.'" Amgen Inc. v. Hoechst Marion Roussel, Inc., 314 F.3d 1313, 1326 (Fed. Cir. 2003) (quoting SRI Int'l v. Matsushita Elec. Corp. of Am., 775 F.2d 1107, 1122 (Fed. Cir. 1985)).

In contrast to intrinsic evidence, extrinsic evidence, "consist[ing] of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises," is less favored in the claim construction analysis. Markman, 52 F.3d at 980. Although the Federal Circuit has expressly "authorized district courts to rely on extrinsic evidence," Phillips, 415 F.3d at 1317, it warned that such exogenous evidence is "less significant than the intrinsic record in determining the 'legally operative meaning of disputed claim language.'" C.R. Bard, Inc. v. U.S. Surgical Corp., 388 F.3d 858, 862 (Fed. Cir. 2004) (quoting Vanderlande

Indus. Nederland BV v. Int'l Trade Comm'n, 366 F.3d 1311, 1318  
(Fed. Cir. 2004)).

**B. The '617 Patent**

The parties have requested that the Court interpret the meaning of the term "synchronization signal" found in claims 1, 2, and 6 of the '617 patent. The term is used in the same manner in all three claims. Claim 1 is representative:

A scanning apparatus for scanning an object to generate three-dimensional data, comprising a scanner mounted on a multiply-jointed arm for movement by an operator to scan the object to capture data from a plurality of points on the surface of the object, the scanner comprising:

a light source operable to emit light onto the object surface; and

a light detector operable to detect light reflected from the object surface by recording reflected light at recording times defined by a **synchronization signal**;

a position calculator for calculating the position of the multiply-jointed arm, and outputting position data defining the position in response to a trigger pulse; and

a trigger pulse generator for receiving the **synchronization signal** for the light detector defining the recording times thereof, and, in response thereto, generating and outputting trigger pulses to the position calculator to cause the position calculator to output position data for each of at least some of the recordings by the light detector; and

a three dimensional data generator for receiving recorded data output by the light detector and associated position data output from the position calculator, and for

processing the data to generate three-dimensional data related to the object.

'617 patent col. 29, ll. 34-60. The parties agree that the terms "light detector" and "camera" are interchangeable.

Metris argues that "synchronization signal" should be construed as a "signal used to synchronize (coordinate in time) events or actions." Faro advances a narrower definition: "a series of electrical timed electrical signals defined by the camera which are generated to define when the scanning device captures the reflected light." The present dispute focuses on the portion of the definition underlined above.

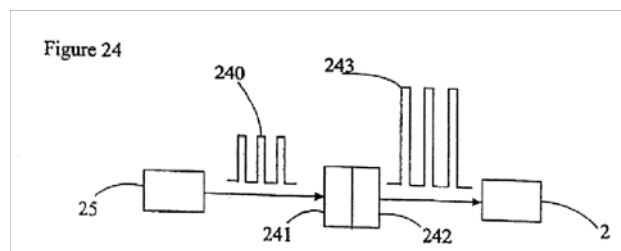
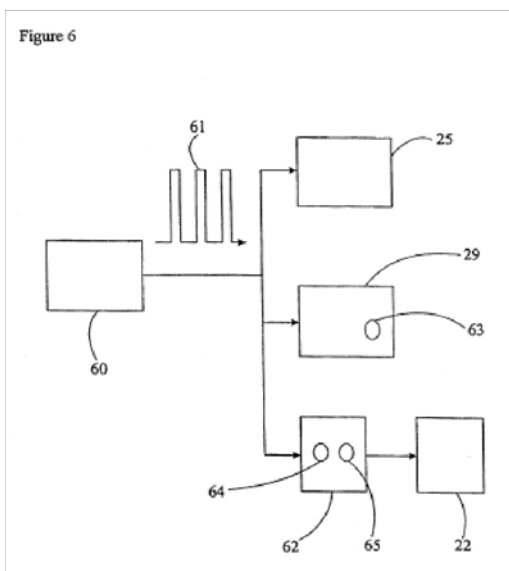
While not contesting that the signals at issue are "electrical," Metris argues that the plain language of the claim does not require that the synchronization signal be "defined by the camera." Claim 1 requires that the light detector record "reflected light at recording times defined by a synchronization signal." '617 patent, col. 29, ll. 44-45. Later in the claim, it also requires that the "trigger pulse generator" receive the "synchronization signal for the light detector defining the recording times thereof." '617 patent, col. 29, ll. 49-50 (emphasis added). There is no claim limitation restricting the origin of the synchronization signal.

Faro contends that Claim 1 requires that the camera (or "light detector") define the recording times of the synchronization signal. With respect to the language relating to

the trigger pulse generator, Metris argues that the word "defining" modifies "synchronization signal," so that the synchronization signal defines the recording times for the light detector. As discussed at the Markman hearing, the word "defining," read in isolation, plausibly could be read to modify the term "light detector" which it follows directly. However, if that were the intended meaning, the word "for" would likely not have been used. Moreover, earlier, the claim provides that the recording times of the camera are "defined by a synchronization signal." '617 patent, col. 29, ll. 45. No language in the claim compels Faro's conclusion that the synchronization signal is "defined by the camera," in the sense of emanating from it. When the word "defining" is read in combination with other claim language, Metris' reading is more logical. Brookhill-Wilk 1, LLC v. Intuitive Surgical, Inc., 334 F.3d 1294, 1299 (Fed. Cir. 2003) ("While certain terms may be at the center of the claim construction debate, the context of the surrounding words of the claim also must be considered in determining the ordinary and customary meaning of those terms.").

To the extent that there is any ambiguity (which there is not), the patent specification amply supports Metris' construction. The specification states that "there are many methods" of performing the synch and trigger function. '617 patent, col. 25, ll. 12-13. It goes on to indicate "[o]ne method," in which the synchronization signal comes "from a CCD

camera 25." '617 patent, col. 25, ll. 13-14 (emphasis added). Earlier in the specification, however, the synchronization signal "is fed into the high resolution camera 25 and the colour camera 29." '617 patent, col. 10, ll. 61-62 (emphasis added). As illustrated in Figures 6 and 24 of the patent specification, the synchronization signal may come from the camera or go to the camera<sup>3</sup>:



A claim should almost never be construed to exclude one of the embodiments found in the specification. Vitronics Corp. v. Conceptor, 90 F.3d 1576, 1583 (Fed. Cir. 1996) ("Such an

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<sup>3</sup> In these images, item 25 represents the camera, and items 61 and 240 are both identified as synchronization signals. In Figure 6, the synchronization signal moves from a synchronization generator to the camera. '617 patent, col. 10, ll. 60-62. In Figure 24, the synchronization signal moves from the camera to electronic circuitry. '617 patent, col. 25, ll. 13-15.

interpretation is rarely, if ever, correct and would require highly persuasive evidentiary support, which is wholly absent in this case." ).

To support its construction, Faro resorts to the prosecution history. In the Patent Office's Notice of Allowability, the examiner stated, "[T]he cited prior art fails to teach or suggest the features of 'receiving the synchronization signal for the camera defining the recording times thereof, and, in response thereto, generating and outputting trigger pulses to the position calculator to cause the position [sic] to output position data for each image recorded by the camera.'" (P.'s Ex. B. 380.) From this thin bullrush, Faro seeks to build a pyramid, arguing that the language demonstrates that the examiner intended to grant a patent only for a synchronization signal that was generated "by the camera." (P.'s Br. 22.) However, as Metris points out, in the prosecution history quoted above, the examiner merely restated the proposed claim verbatim, as is indicated by the examiner's use of quotation marks. The examiner never uses the words "defined by the camera" in the quoted portion of the prosecution history.

Nothing in the claim language, the specification, or the prosecution history compels the claim construction that the synchronization signal must be defined "by the camera".

#### **CLAIM CONSTRUCTION**

The term "synchronization signal" is construed as an *electronic signal used to coordinate events or actions.*

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PATTI B. SARIS  
United States District Judge