

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

CIVIL ACTION NO. 05-11098-GAO

AVIDYNE CORP.,
a Delaware corporation,
Plaintiff

v.

L-3 COMMUNICATIONS AVIONICS SYSTEMS, INC.,
f/k/a B.F. GOODRICH AVIONICS SYSTEMS, INC.,
a Delaware corporation
Defendant

OPINION AND ORDER

November 7, 2008

O'TOOLE, D.J

The defendant L-3 Communications Avionics Systems, Inc. (“L-3”) holds United States Patent No. 5,841,018 (the “’018 Patent”) entitled, “Method of Compensating for Installation Orientation of an Attitude Determining Device Onboard a Craft” (filed Dec. 13, 1996). The plaintiff Avidyne Corporation (“Avidyne”) designs and sells integrated flight deck systems, including the Flightmax Entegra. After L-3's counsel wrote to Avidyne alleging that the primary flight display of the Flightmax Entegra infringed the ’018 Patent, Avidyne commenced this action seeking a declaratory judgment that the Flightmax Entegra does not infringe L-3's patent and that the ’018 Patent is invalid. L-3 counterclaimed alleging infringement.

There are twenty claims in the ’018 Patent, two of which, 1 and 16, are independent claims. The present issue concerns the proper construction of these two claims in accordance with Markman v. Westview Instruments, Inc., 517 U.S. 370 (1996). The parties stipulated to the meaning of some terms in the claims but dispute the proper meaning to be given to other claim terms. After hearing and

consideration of the parties' submissions, the disputed claim terms are construed as set forth in this Opinion and Order.

I. Background

The '018 Patent claims a method for adjusting for the imprecise, that is, non-leveled, installation of an "attitude determining device" ("ADD") on the instrument panel of a mobile craft. An ADD is simply a device which compares the actual attitude of the craft to outside reference coordinates (typically called the "earth frame") and measures any difference. In brief, the ADD measures a craft's roll, pitch, or yaw as "the current angle between the aircraft reference coordinate system and earth frame." '018 Patent 1:27-29. If the ADD is not leveled to the coordinate reference system of the craft itself, to the extent of the difference there will be an error in the determination of the craft's attitude with respect to the earth frame.

One way of avoiding such errors is to mechanically align the ADD with the leveled craft when it is installed. There are practical difficulties, however, in achieving satisfactory alignment when the ADD is installed in a craft's cockpit instrument panel, including accommodation to the design of the instrument panel and the possibility of variances in manufacturing tolerances of both the ADD and the panel. The patent's inventive method avoids problems associated with manual alignment. The ADD may be installed at any orientation because it will sense its own installation orientation relative to the craft and correct for any deviation from the craft's coordinate reference system.

II. Claim Construction Framework

Claim construction seeks to assign to claim terms "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 v. AWH Corp., 415 F.3d 1303, 1313 (Fed. Cir. 2005); see also Vitronics Corp. v. Conception, Inc., 90 F.3d 1576,

1582 (Fed. Cir. 1996) (noting that claim terms should be given “their ordinary and customary meaning”). There is “no magic formula or catechism” for construing disputed terms. Phillips, 415 F.3d at 1324. Courts may examine both intrinsic and extrinsic evidence to determine how the term would be understood by a person skilled in the art. Intrinsic evidence, such as the claims themselves, the specification, and the prosecution history, is “the most significant source of the legally operative meaning of disputed claim language.” Vitronics Corp., 90 F.3d at 1582. Extrinsic evidence, including dictionaries, treatises, and expert and inventor testimony may further help a construing court to understand technical aspects of the field of invention, including the special meanings terms may be given by practitioners of the relevant art. Id. at 1582-83. But while extrinsic evidence “can shed useful light on the relevant art,” it “is less significant than the intrinsic record in determining the legally operative meaning of disputed claim language.” See C.R. Bard, Inc. v. U.S. Surgical Corp., 388 F.3d 858, 862 (Fed. Cir. 2004) (internal quotation omitted).

III. Claim Construction of Claims 1 + 16 of the '018 Patent

Claim 1 the '018 Patent reads:

A method of compensating for installation orientation of an attitude determining device on-board a mobile craft with respect to a reference coordinate system of said craft to obtain attitude information of said craft from said device based on an earth frame coordinate system, said method comprising the steps of:

- installing said attitude determining device on-board said mobile craft at an unknown orientation with respect to said reference coordinate system of said craft;
- sensing the installation orientation of said attitude determining device with respect to said earth frame coordinate system when said craft is at rest to obtain a static orientation measurement of said device;
- measuring an attitude of said mobile craft with said attitude determining device; and
- compensating said craft attitude measurement of said device with said static orientation measurement to obtain attitude information of said craft’s reference coordinate system with respect to said earth frame coordinate system.

Claim 16 reads:

A method of compensating for installation orientation of an attitude determining device on-board a mobile craft with respect to a reference coordinate system of said craft to obtain attitude information of said craft from said device based on an earth frame coordinate system, said method comprising the steps of:

installing said attitude determining device -board said mobile craft at an unknown orientation with respect to said reference coordinate system of said craft;
sensing the installation orientation of said attitude determining device with respect to said earth frame coordinate system when said craft is at rest to obtain a static orientation measurement of said device;
storing said static orientation measurement in a memory;
measuring an attitude of said mobile craft with said attitude determining device;
retrieving said static orientation measurement from said memory to a processor of said device; and
compensating said craft attitude measurement with said retrieved static orientation measurement in said processor to obtain attitude information of said craft's reference coordinate system with respect to said earth frame coordinate system.

A. Preamble (Claims 1 + 16)

The preamble is identical in each of Claims 1 and 16 , appearing at 5:59-64 and 8:1-6:

A method of compensating for installation orientation of an attitude determining device on-board a mobile craft with respect to a reference coordinate system of said craft to obtain attitude information of said craft from said device based on an earth frame coordinate system, said method comprising the steps of . . .

Although L-3 argues otherwise, the preamble is not limiting. As a general rule, a preamble is “not limiting when the claim body describes a structurally complete invention such that deletion of the preamble phrase does not affect the structure or steps of the claimed invention.” Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc., 289 F.3d 801, 809 (Fed. Cir. 2002). Here, Claims 1 and 16 set out a complete method for compensating for an ADD’s installation orientation. Both can be fully understood without reference back to the preamble.

While the disputed terms – “attitude determining device” and “compensating” – are introduced in the preamble, the claim body expressly recites those terms. “Attitude determining device” appears

in the “installing” step and “compensating” is described as the final step set out in both claims. This case is different from Bicon, Inc. v. Straumann Co., 441 F.3d 945 (Fed. Cir. 2006), where the use of a general term in the body of the claim was illuminated by an invention-specific use of the term in the preamble. There, the preamble provided a necessary antecedent basis for a term used later in the claim because the preamble described “an abutment on a root member implanted in the alveolar bone of a patient,” while subsequent claim language referred merely to “the abutment.” Id. at 953. Here, the terms in the preamble are not more specific or illuminating than the body of the claim and, consequently, are not necessary to understand what the inventors claim.

L-3 argues that the prosecution history suggests that the preamble was used to distinguish the claimed methods over prior art. The patent examiner initially rejected Claims 1 and 16 because compensating for an ADD’s installation orientation was an established practice in the avionics field. (Def.’s Markman Claim Constr. Br. Ex. 3, ¶ 2.) To rebut this finding of obviousness, the inventors emphasized:

Independent Claims 1 and 16 recite, in substance, a method of compensating for installation orientation of an attitude determining device on board a mobile craft comprising of the steps of 1) installing the attitude determining device at an unknown orientation with respect to the reference coordinate system. . . .

(Id. Ex. 4, 3) (emphasis in original). This emphasis indicates that the inventors’ method was unique because it could compensate for an “unknown” orientation. That important element is present not in the preamble, but rather in the described first step. ’018 Patent 5:65-67; 8:7-9 (“[I]nstalling said attitude determining device on-board said mobile craft at an unknown orientation with respect to said reference coordinate system of said craft. . . .”). The inventors did not clearly rely on the preamble language to distinguish the claims over prior art and the preamble does not require construction.

B. Attitude Determining Device (Claims 1 + 16)

An “attitude determining device” is at the core of Claims 1 and 16. The term is not common or standard in the relevant art. (See Def.’s Markman Claim Constr. Resp. Br. Ex. 15, 6.) More common terms for such a device “include inertial measurement unit (‘IMU’), inertial reference unit (‘IRU’), inertial navigation system (‘INS’), and attitude heading and reference system (‘AHRS’).” (Id.) L-3 contends that an ADD is any device which determines attitude. Avidyne asserts that an ADD is a device that has sensors and uses a processor to determine attitude.

The starting point for any claim construction is the language of the claims. Claim 1 does not recite a processor or sensors. In contrast, Claim 16 indicates that the static orientation measurement is retrieved from a memory to “a processor of said device.” ’018 Patent 8:19. Dependant Claim 17 adds an element indicating that the Claim 16’s “sensing” step is done “with sensors disposed at the device.” ’018 Patent 8:28.

The doctrine of claim differentiation is pertinent here, and two presumptions guide the interpretation of the disputed term: first, independent claims have different scopes when they use different words or phrases; and second, independent claims will not be construed as including a limitation that is added by a dependant claim. Halliburton Energy Servs., Inc. v. M-I LLC, 514 F.3d 1244, 1252 n.3 (Fed. Cir. 2008); Seachange Int’l, Inc. v. C-COR, Inc., 413 F.3d 1361, 1361-68 (Fed. Cir. 2005). By describing an ADD with a “processor” in Claim 16, the inventors imply that ADDs, as a class, may – but need not – include a processor. The inclusion of a processor in Claim 16 thus differentiates that claim from the broader method claimed in Claim 1, which refers to a broader class of ADDs including devices both with and without a processor. Similarly, dependant Claim 17’s

requirement of sensors further qualifies the method claimed in Claim 16, as well as Claim 1.

Avidyne correctly notes that the preferred embodiment discusses an ADD employing a processor, “internal acceleration sensors,” and “rate sensors.” See, e.g., ’018 Patent 3:19-40. The purpose of describing a preferred embodiment, however, is to disclose the best mode of carrying out the invention, not the only mode. See Phillips, 415 F.3d at 1323. Setting forth a preferred embodiment is especially useful in fulfilling the “written description” requirement and enabling a person skilled in the art to practice the invention, but it does not limit the scope of the claims. Honeywell Int’l Inc. v. Universal Avionics Sys. Corp., 488 F.3d 982, 997 (Fed. Cir. 2007); In re Cruciferous Sprout Litig., 301 F.3d 1343, 1348 (Fed. Cir. 2002). This is true even when the specification discloses only a single embodiment. See Phillips, 415 F.3d at 1323 (“[W]e have expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment.”). Consequently, Avidyne’s argument that the ADD must include a “processor” and “sensors” is unpersuasive.

Both parties agree an ADD’s purpose is to determine attitude. By stipulation, they agree that “attitude” is “the angular position of a craft relative to a frame of reference.” (Stipulation as to Agreed-Upon Claim Constr. of Certain Terms Contained Within Claims 1 and 16 of U.S. Patent 5,841,018 ¶ 1, Sept. 28, 2006 [hereinafter ’018 Stipulation].) In the briefing, there is some suggestion that “orientation” is a better word to use than “position.” These words, in context, mean essentially the same thing and could be used interchangeably. Though the parties have agreed that “attitude” is “angular position,” “orientation” seems more appropriate in a context where *relative* position, rather than static position, is what is at the heart of the matter.

The parties further agree that an “earth frame coordinate system” is a type of frame of

reference. (Id. ¶ 3.)

As used in the '018 Patent, an“attitude determining device” is construed to mean *a piece of equipment on board a mobile craft that determines angular orientation relative to the earth frame coordinate system and is used to establish the attitude of the craft.*

C. *Sensing the Installation Orientation of Said Attitude Determining Device with Respect to Said Earth Frame Coordinate System When Said Craft is at Rest to Obtain a Static Orientation Measurement of Said Device (Claims 1 + 16)*

The parties dispute the meaning of “sensing” in this step that appears in both Claims 1 and 16. The substantial dispute is whether “sensing” is done “automatically” or not and whether “detecting” or “determining” is a better synonym for “sensing.”

There is no explicit definition of “sensing” within the patent. Avidyne cites a definition from a general purpose that defines the verb “to sense” as “to detect automatically.” Webster’s New Riverside Dictionary 618 (rev. ed. 1996). It seems Avidyne is more taken with the adverb in that phrase than the verb. In its proposed construction, Avidyne substitutes the word “determining” for “detecting,” but also insists on the “automatically.” It is easy to find another general dictionary that contradicts Avidyne’s proposal in both respects. For example, Random House Webster’s College Dictionary 1221 (1992) includes an entry for the transitive verb to “sense” which reads “to detect (physical phenomena, as light or temperature) mechanically, electrically or photoelectrically.” *Detect*, but not *automatically*. Perhaps this is an illustration of why general purpose dictionaries are only of limited value in claim construction. See Phillips, 415 F.3d at 1321 (noting that reliance on dictionaries “risks transforming the meaning of the claim term to the artisan into the meaning of the term in the abstract, out of its particular context, which is the specification”).

From the specification it is apparent that sensing may – but need not – occur automatically.

Compare '018 Patent 4:7-11 (“In the present embodiment, upon installation of the device 20 on the instrumentation panel 30 . . . the installation orientation thereof is automatically measured. . . .”) with '018 Patent 5:45-50 (“In attitude determining devices in which there is no non-volatile memory, the step of sensing the installation orientation . . . may be performed each time the power is turned on. . . .”).

The only possible shade of difference between “detecting” and “determining” is that the former suggests a simple act of perception, whereas, the latter may be thought to imply some level of computation or processing. Since computation or processing is not essential at this step, “detecting” is a preferable construction to “determining.”

For the reasons set out in the previous section, the term “orientation” is superior in this context to “position.”

The '018 Patent repeatedly emphasizes that an ADD senses its own installation orientation. See, e.g., '018 Patent, at [57] (“[A]n attitude of the mobile craft with respect to the earth frame is measured *with* the attitude determining device.”); '018 Patent 1:59-62 (“The static installation orientation is automatically determined by the device *itself*. . . .”); '018 Patent 6:5-6 (“[M]easuring an attitude of said mobile craft *with* said attitude determining device.”) (emphasis added).

As used in Claims 1 and 16, “sensing the installation orientation of said attitude determining device with respect to said earth frame coordinate system when said craft is at rest to obtain a static orientation measurement of said device” means *detecting an angular orientation with the installed attitude determining device relative to earth frame while the craft is not moving to obtain a static orientation measurement of said device*.

D. *Measuring an Attitude of Said Mobile Craft with Said Attitude Determining Device (Claims 1 + 16)*

The parties disagree about precisely what attitude is being measured in the “measuring” step of Claims 1 and 16.¹ Avidyne asserts that it is a “precompensated” attitude – that is, the attitude of the craft that would be indicated by the imprecisely installed ADD before it was corrected to account for the difference between the orientation of the device and the orientation of the craft, a correction that is accomplished in the “compensating” step that follows. In effect, Avidyne’s proposed construction would mean that the “measuring” step *must occur before* the “compensating” step. While L-3 acknowledges that the “installing” step is necessarily accomplished before the others, it contends that the claims, understood in light of the specification, need not be accomplished in the order in which they are set out in the claims.

As a general rule, it is not a limitation in a method claim that specified steps be accomplished in the order in which they are set forth unless the claim explicitly says they are to be performed in that order, or unless “the method steps implicitly require that they be performed in the order written.” Interactive Gift Express, Inc. v. Compuserve, Inc., 256 F.3d 1323, 1342-43 (Fed. Cir. 2001). A requirement that the steps be accomplished in the sequence in which they appear in the claim might be inferred because the claim language, as a matter of logic or grammar, necessarily requires the steps be performed in the order written or because the light cast on the claim meaning by the specification directly or implicitly requires strict sequential performance of the steps. See Altiris, Inc. v. Symantec

¹ Avidyne’s proposed construction of this claim language included reference to a processor and sensors. (Pl.’s Opening Markman Br. 13) (construing this claim to mean “processing the output of the sensors of the attitude determining device to determine a precompensated attitude of the mobile craft”). As discussed *supra* Part III(B), the claim language and specification indicate that ADDs do not require these structural sub-components. This Court will similarly not read these sub-components into the “measuring” step.

Corp., 318 F.3d 1363, 1369-70 (Fed. Cir. 2003).

Avidyne’s argument, at base, is that since the “compensating” step compensates for the difference (if any) between (a) the static orientation measurement obtained in the “sensing” step and (b) the attitude of the craft measured in the “measuring” step, both values must have been determined before the compensating can occur. In other words, the difference between (a) and (b) can only be adjusted if (a) and (b) have already been established.

The specification describes an embodiment in which the steps are performed in the order in which they are set out in the claims, and it is therefore clear that the method *can* be practiced by following that sequence. The question is, however, whether the method *can only* be practiced in that sequence.

L-3 acknowledges that the steps would be followed in the sequence set forth with respect to a craft at rest, citing the following language of the specification (referring to Fig. 5): “[T]he attitude of the craft 10 with respect to earth frame is determined by the processor 52 by subtracting these installation angles ϕ_c^2 and ρ_c^3 from the static angles of the device with respect to earth frame.” ’018 Patent 4:47-50. L-3 further contends, however, that with respect to a moving craft, the “compensating” could be performed before or simultaneously with the “measuring,” citing the following language of the specification: “Thereafter, the pitch and roll attitude angles of the moving craft 10 are computed conventionally by the processor 52 via the rate sensors ω_x , ω_y , ω_z which are shown at block 56 of the device 20 and received by the processor 52.” ’018 Patent 4:50-54. This describes an embodiment, according to L-3, in which “when power is turned on the attitude determining device is compensated with the static orientation measurement, and when the craft moves

² Respecting pitch.

³ Respecting roll.

thereafter the measurements made by the attitude determining device are already compensated.” (Def.’s Markman Claim Constr. Br. 27.) In effect, for a moving craft, the four-step method might be compressed to a three-step method because the “measuring” and “compensating” steps are simultaneous, becoming essentially a “measuring and compensating” step.

The quoted language of the specification is murky and if that were the only support for L-3’s argument it might not be persuasive. But there are two other sources of support for the interpretation. First, the prosecution history offers support for the possibility of a compression of the method to three steps where two of the articulated four occur simultaneously. In their response to the examiner’s original rejection of some claims, the inventors said:

Independent claims 1 and 16 recite, in substance, a method of compensating for installation orientation of an attitude determining device on board a mobile craft comprising the steps of 1) installing the attitude determining device at an unknown orientation with respect to the reference coordinate system of the craft, 2) sensing the installation orientation while the craft is at rest to obtain a static orientation measurement of the device, and 3) compensating the craft attitude measurement of the device with the static orientation measurement.

(Id. Ex. 4, 3) (emphasis in original).

The examiner was persuaded that the inventors had overcome his objections and allowed the claims, stating:

The primary reason for allowance of the claims is that prior art neither teach nor fairly suggest the particular combinations of the method of compensating for installation orientation of an attitude sensor as appears in method claims 1 and 16. Major emphasis is being placed upon the provision of an [sic] “installing” an “altitude determination [sic] device” at an “unknown orientation” and “compensating” the result with a “static orientation measurement” in combination with other limitations of the said independent claim, and its dependent ones.

(Pl.’s Resp. to Def.’s Markman Br. Ex. 1, pt. II, 25.)

Two things are notable about this statement. First, the examiner refers to “combinations” – plural – of the method, suggesting that there is not a single “combination” of the steps limited to the precise order of articulation in claims. Second, and more importantly, the examiner emphasizes three

essential elements of the claims: (1) “installing” the device and (2) “compensating” a result (presumably of a measurement) with (3) a “static orientation measurement.” (Id.) In other words, consistent with the inventors’ response, he also envisioned that the four-step method could be compressed into three steps when one step in the three-step method encompasses two steps in the four-step method.

L-3's position is further supported by evidence from one of its experts, Dr. Jonathan P. How.

In his affidavit, Dr. How states:

The output of “sensors” associated with devices used to provide attitude information is typically in volts. Computational operations utilizing these voltage signals need not be performed to first determine a pre-compensated attitude of the craft with subsequent further computational operations performed to obtain a compensated attitude of the craft. . . . For example, computational operations utilizing such voltage signals may be performed that directly result in compensated attitude information of the craft without the intermediary step suggested by Avidyne. . . .

(Def.’s Markman Claim Constr. Resp. Br. Ex. 15, 6.)

Avidyne has not effectively rebutted L-3’s arguments in this respect. Specifically, it has not shown how a simultaneous performance of both the “measuring” and “compensating” steps is not possible. The failure to do so is significant because, if it is possible to have a simultaneous performance of these two steps, then in the absence of any express limitation of the claims to the sequence as set forth, they cannot be considered to be so limited.

Avidyne’s argument that the word “said” in the “compensating” step – “compensating said craft attitude measurement” – is a sequence-determining signal lacks merit. See, e.g., Moba, B.V. v. Diamond Automation, Inc., 325 F.3d 1306, 1310 (Fed. Cir. 2003); Altiris, Inc., 318 F.3d at 1367. The use of “said,” in this context, is simply a way to avoid needless repetition of the full term to which it applies. See Manual of Patent Examining Procedure § 2173.05(e) (8th ed. 2001); 2 Patent Practice 10-18 (5th ed. 1993).

As used in Claims 1 and 16, “measuring an attitude of said mobile craft with said attitude determining device” means *using the attitude determining device to measure an angular orientation of the mobile craft*. It does not include a limitation that the “measuring” precede the “compensating” set forth in the step that follows in the claim.

E. *Compensating Said Craft Attitude Measurement of Said Device with Said Static Orientation Measurement to Obtain Attitude Information of Said Craft's Reference Coordinate System with Respect to Said Earth Frame Coordinate System (Claim 1)*

&

Compensating Said Craft Attitude Measurement with Said Retrieved Static Orientation Measurement in Said Processor to Obtain Attitude Information of Said Craft's Reference Coordinate System with Respect to Said Earth Frame Coordinate System (Claim 16)

The principal part of the parties’ disagreement with respect to the meaning to be given the “compensating” step relates to whether the claims require the steps to be performed in a particular sequence. That has been resolved in the previous section of this Opinion.

What remains seems to be only a difference in expression, not a difference in substance. It is clear that what needs to be compensated for is any difference between the static orientation of the ADD itself and the craft’s reference coordinate system. It is also clear that the compensating adjustment is made by a mathematical operation.

Neither party’s proposal is satisfactory, but that is largely due to the likely fact that they were drafted with the sequence controversy in mind. Given what seems to be the common ground on the objective of the “compensating” step, however, the following constructions should serve:

In Claim 1, “compensating said craft attitude measurement of said device with said static orientation measurement to obtain attitude information of said craft’s reference coordinate system with respect to said earth frame coordinate system” means *adjusting for any difference between the static installation orientation of the attitude determining device and the reference coordinate system of the*

craft so that any such difference does not affect the determination of the attitude of the craft relative to the earth frame.

In Claim 16, “compensating said craft attitude measurement with said retrieved static orientation measurement in said processor to obtain attitude information of said craft’s reference coordinate system with respect to said earth frame coordinate system” means *adjusting for any difference between the static installation orientation of the attitude determining device and the reference coordinate system of the craft by means of a mathematical operation so that any such difference does not affect the determination of the attitude of the craft relative to the earth frame.*

F. Storing Said Static Orientation Measurement in a Memory (Claim 16)

Any dispute over this term has evaporated over the course of the briefing. In Claim 16, “storing said static orientation measurement in a memory” means *retaining the static orientation measurement data within a memory of the ADD.*

G. Retrieving Said Static Orientation Measurement from Said Memory to a Processor of Said Device (Claim 16)

Two central disputes arise in the parties’ proposed constructions of Claim 16’s “retrieving” step. The first dispute centers on the meaning of “retrieving;” the second concerns the definition of “processor.” As both terms carry specific meanings in the world of computer science, technical dictionaries offer insight into how a person of ordinary skill in the art would understand these terms.

To “retrieve” simply means “to find and select specific information.” McGraw-Hill Dictionary of Scientific and Technical Terms 1701 (5th ed. 1994). The specification conforms to this definition. The static orientation measurement can be stored in the ADD’s memory for use in the “compensating” step. The “installation angles φ_c and ρ_c are read from the non-volatile memory” and transferred to the

processor for the compensation calculation. '018 Patent 4:45-50. L-3's proposed construction skips the very heart of the "retrieving" step. It proposes that "retrieving" means "providing the static orientation measurement data to an electronic computational device." But the providing is done only after what is to be provided has been retrieved. As the specification language just quoted indicates, the necessary data are "read" from the memory. To "read" data is essentially equivalent, at least in the present context, to retrieving the data.

A "processor," in computer science jargon, is "a device that performs one or many functions, usually a central processing unit." McGraw-Hill Dictionary of Scientific and Technical Terms 1582. L-3 contends that use of this generic term would lead to juror confusion; thus, processor must be defined as an "electronic computational device." There is no basis in claims, specification, prosecution history, or any extrinsic evidence supporting the substitution of "electronic computational device" for "processor," a word that the patent uses. See, e.g., '018 Patent 3:34-36; 4:43-45.

In Claim 16, "retrieving said static orientation measurement from said memory to a processor of said device" means *obtaining the previously stored static orientation measurement and providing it to a processor within the attitude determining device.*

/s/ George A. O'Toole, Jr.
United States District Judge