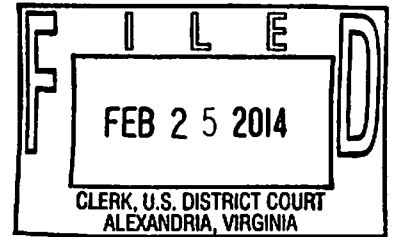


**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
Alexandria Division**



**TOMTOM, INC.,
Plaintiff,**

v.

**AOT SYSTEMS GMBH, et al.,
Defendants.**

Case No. 1:12cv528

MEMORANDUM OPINION

This declaratory judgment action is a patent infringement suit. Plaintiff TomTom, Inc. (“TomTom”), the putative infringer of U.S. Patent No. 6,356,836 (“the ‘836 patent”) owned by defendant Michael Adolph, seeks a declaration that the claims of the ‘836 patent are invalid and that TomTom does not infringe any valid claim of the ‘836 patent, which purports to cover a method for tracking data in a mobile Global Positioning System (“GPS”) unit. Defendant Michael Adolph (“Dr. Adolph”) not only opposes TomTom’s request for a declaration but also counterclaims that TomTom infringes the ‘836 patent and seeks damages. As is typical in patent infringement actions, the parties here dispute the meaning of several patent claim terms and phrases, thereby requiring *Markman*¹ claim construction of the disputed terms and phrases. The resolution of these disputes is the subject of this memorandum opinion.

I.

Plaintiff and counterclaim defendant TomTom is a Massachusetts corporation with its principal place of business in Massachusetts. TomTom sells personal navigation devices (“PNDs”) that use software called “HOME.” The HOME software gathers historical travel data stored on TomTom devices, including location information, time of travel for certain routes, and

¹ *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 372 (1996) (“The construction of a patent, including terms of art within its claim, is exclusively the province of the court”).

historical speed data. TomTom also sells PNDs and software including the “IQ Routes” system, which gathers travel data and uses the data to recommend routes with the shortest travel times. Finally, TomTom sells PNDs and software with the “HD Traffic” system, which uses real-time traffic data to recommend routes with shorter travel times.

Defendant and counterclaim plaintiff Michael Adolph, an individual residing in Germany, is the inventor and owner of the ‘836 patent, entitled “Method and Device for Generating, Merging and Updating of Destination Tracking Data,” issued March 12, 2002. TomTom’s complaint originally named AOT Systems GmbH (“AOT”), a German corporation established by defendant Dr. Adolph in 2000, with its principal place of business in Germany. AOT is the exclusive licensee of the ‘836 patent. On August 3, 2012, TomTom amended its complaint to add Dr. Adolph as a second defendant. On September 14, 2012, AOT’s motion to dismiss for lack of personal jurisdiction was granted, and all claims against AOT were dismissed, leaving Dr. Adolph as the sole defendant. *TomTom, Inc. v. AOT Systems GmbH*, Case No. 1:12-cv-528 (E.D. Va. Sept. 14, 2012) (Order).

The ‘836 patent, which consists of 53 claims, recites in the two claims at issue— independent claim 1 and dependent claim 22—a method for generating and updating travel data for use in a destination-tracking system. This system, according to the claims in issue, includes the generation and storage of data by mobile units to record real routes and traffic conditions.

In February and March 2011, AOT sent two letters to TomTom alleging that TomTom infringed the ‘836 patent and its European counterparts and threatening to take legal action. On June 28, 2011, representatives of TomTom, Dr. Adolph, and AOT met in person to discuss the ‘836 patent. TomTom alleges that during the course of this meeting, representatives of Dr. Adolph and AOT reiterated the allegation that TomTom infringes the patent and its European

counterparts, and they stated their intention to enforce those patents against TomTom. Dr. Adolph, in turn, alleges that, during the course of this meeting, the parties discussed AOT and Dr. Adolph's offer to license the German counterpart of the '836 patent, but that the parties were unable to reach any licensing agreement.

On February 3, 2012, AOT filed a lawsuit in Germany against TomTom's customer, REWE Unterhaltungselektronik GmbH, seeking damages and injunctive relief for REWE's sales of TomTom products that AOT asserts infringe a European counterpart to the '836 patent. Thereafter, on May 11, 2012, TomTom filed this declaratory judgment suit, alleging that the '836 patent is invalid as obvious and anticipated by prior art, and that, in any event, TomTom does not infringe any valid claims of the '836 patent. On October 3, 2012, Dr. Adolph filed a counterclaim against TomTom, alleging that TomTom directly and indirectly infringes the '836 patent.

The '836 patent consists of 53 claims. Claims 1 and 22, the sole claims in issue, read as follows:

1. A method for generating and updating data for use in a destination tracking system of at least one mobile unit comprising:

Generating and storing traveled distance data in at least one storage device provided in said mobile unit at least at predetermined time intervals, wherein the traveled distance data represent traveled sections by at least a series of nodes P_i and to each node P_i geographical coordinates x_i and y_i are assigned;

Generating and storing section data in the storage device provided in the mobile unit, said section data being generated by selecting, from the traveled distance data, nodes P_j and P_k , which define contiguous sections P_jP_k , to which at least their geographical starting point and end point are assigned; and

Generating a section data file from the section data and storing the section data file in the storage device provided in the mobile unit, said section data file being continuously supplemented and/or updated with section data newly generated by the mobile unit.

22. The method according to claim 1, further comprising the step of determining **absolute coordinates of the mobile unit** using the Global Positioning System.

The parties dispute the meaning of the following nine claim terms or phrases, bolded above, in claims 1 and 22.

- (i) “to each node P_i geographical coordinates x_i and y_i are assigned,” as used in claim 1;
- (ii) “absolute coordinates of the mobile unit,” as used in claim 22;
- (iii) “generating and updating data for use in . . . ,” as used in the preamble of claim 1;
- (iv) “destination tracking system of at least one mobile unit,” as used in the preamble of claim 1;
- (v) “section data,” as used in claim 1;
- (vi) “selecting from the traveled distance data, nodes P_j and P_k which define contiguous sections P_jP_k ,” as used in claim 1;
- (vii) “storing traveled distance data in at least one storage device,” as used in claim 1;
- (viii) “storing section data in the storage device,” as used in claim 1; and,
- (ix) “storing the section data file in the storage device,” as used in claim 1.

Further, TomTom argues that the term “storage device” in claim 1 is fatally indefinite and therefore cannot be construed. This argument, as explained below, is unpersuasive; the term “storage device” is not fatally indefinite, and therefore its meaning in claim 1 must be addressed.

A.

A brief review of the prosecution history and prior art is central to a proper construction of the patent’s disputed claim terms and phrases.

In 1997, the priority date for the '836 patent,² consumers were beginning to use GPS units for navigation while driving. At that time, GPS units provided navigation by continuously analyzing the location of a moving vehicle and comparing that position data with stored road network data. The purposes of these GPS units were (i) to guide drivers to their destinations and (ii) to help drivers avoid areas of congestion or traffic obstructions while driving to their destination. Not surprisingly, therefore, substantial prior art exists in this technology field, and thus, it is equally unsurprising that the prosecution history of the '836 patent reflects various efforts to distinguish the prior art.

The USPTO examiner in October 2000 issued a first Office Action with regard to the '836 patent application, rejecting certain pending claims of the '836 patent application, including claims 1 and 22, as anticipated by U.S. Patent No. 4,982,332 ("the Saito patent"). In doing so, the patent examiner stated that the Saito patent discloses the method of claim 1 and discloses generation of road data that involves adding new roads into a map database for use in an on-board navigational system. The patent examiner also rejected claim 22 because the Saito patent discloses that absolute coordinates of the mobile unit are determined using GPS technology.

Dr. Adolph, the '836 patent applicant, responded on February 28, 2001 by distinguishing the '836 patent on several grounds. First, Dr. Adolph explained that the '836 invention collects not only the geographic points of each section traveled, but also the direction of travel between the points and the traveled distance, the time relationship between the traveled points, and the fact that the traveled points are contiguous. Moreover, under the '836 patent, new geographic information will be stored each time the GPS unit travels a route at a different speed because the recording intervals are time based, so each time a different speed is used, different geographic

² The priority date for the European counterpart to the '836 patent, EP 0 988 508, is December 8, 1997.

data is located. Finally, whereas the Saito patent requires loading an initial database representing roadways into the system before additional travel information is collected, the '836 patent does not require loading any initial information relating to existing road networks in order to start generating and storing travel data.

On April 2, 2001, the patent examiner issued a second Office Action that maintained the rejection of claim 1 as anticipated by the Saito patent. Furthermore, the patent examiner stated that claim 1 was also anticipated by PCT Patent Appl. Publ. No. WO 92/02891 to Thad *et al.* ("Thad"). Dr. Adolph submitted a response to this Office Action, distinguishing the Saito patent again on the grounds stated in the response to the first Office Action, namely, (1) that the Saito patent only stores points as coordinates, while the invention generates and stores section data consisting of the time relationship between traveled points, the direction of travel from one point to the next, and the fact that the points are connected; and (2) that the storage medium in the Saito patent cannot be updated, whereas the storage data file section of the '836 invention can be updated. Furthermore, Dr. Adolph stated that the Thad reference only uses a GPS receiver to determine and store coordinates according to criteria that does not include time information or information about continuous sections. On August 29, 2001, the patent examiner allowed claims 1-53 of the '836 patent, which issued on March 12, 2002.

II.

Over the nearly two decades since *Markman*, the elucidation of claim construction principles has become well-plowed ground, although the plowed furrows have not always been clear or straight lines. Nonetheless, the claim construction principles pertinent here are now well-settled. They are as follows:

Patent terms are presumed to have their ordinary and customary meaning, which 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, *i.e.*, as of the effective filing date of the patent application.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc); *see also Innova/Pure Water, Inc. v. Safari Water Filtration Sys.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004). Accordingly, a person of ordinary skill in the art “is deemed to read the words used in the patent documents with an understanding of their meaning in the field, and to have knowledge of any special meaning and usage in the field.” *Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1477 (Fed. Cir. 1998).

In the event that a claim phrase or claim term’s ordinary meaning is not apparent, then a court may—as would a person of ordinary skill in the art—look to “the words of the claims themselves,...the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art.” *Innova/Pure Water*, 381 F.3d at 1116. In this regard, it is important to note that courts must adhere to the following hierarchy of evidence in construing disputed patent claim phrases and terms: (i) the claim language, (ii) the other intrinsic evidence—*i.e.*, the specification and the prosecution history, and (iii) the extrinsic evidence—*i.e.*, evidence that is external to the patent and prosecution history, such as expert testimony or treatises. *See Advanced Cardiovascular Sys. v. Medtronic*, 265 F.3d 1294, 1304 (Fed. Cir. 2001). Thus, as the Federal Circuit has consistently made clear, the claim construction effort should focus first on the claim language and other intrinsic evidence, only proceeding to examine extrinsic evidence if the intrinsic evidence does not yield an answer. *Vitronics Corp. v. Conceptronic*, 90 F.3d 1576, 1583 (Fed. Cir. 1996); *see also Philips*, 415 F.3d at 1317 (stating that extrinsic evidence is “less significant”

than intrinsic evidence). Of course, courts, in construing claim terms, may always use extrinsic evidence to aid their understanding of the patent technology. *See Markman*, 52 F.3d 967, 980 (Fed. Cir. 1995) (“The court may, in its discretion, receive extrinsic evidence in order to aid the court in coming to a correct conclusion as to the true meaning of the language employed in the patent.”) (internal citations omitted).

Given the hierarchy of claim construction evidence, “the claim construction analysis must begin and remain centered on the claim language itself” because a “bedrock principle” of patent law is that “the claims of a patent define the invention to which the patentee is entitled the right to exclude.” *Innova/Pure Water, Inc.*, 381 F.3d at 1115–16. Thus, a court must “look to the words themselves...to define the scope of the patented invention.” *Vitronics Corp.*, 90 F.3d at 1582. Comparison of disputed claim terms to other claims in the patent, both disputed and undisputed, is often illuminating because “a claim term should be construed consistently with its appearance in other places in the same claim or in other claims of the same patent.” *Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1342 (Fed. Cir. 2001). Furthermore, according to the doctrine of claim differentiation, there is a presumption “that each claim in a patent has a different scope.” *Comark Communications, Inc. v. Harris Corp.*, 156 F.3d 1182, 1187 (Fed. Cir. 1998). In its most specific sense, the doctrine of claim differentiation means that limitations stated in dependent claims “are not to be read into the independent claim from which they depend.” *Karlin Tech., Inc. v. Surgical Dynamics, Inc.*, 177 F.3d 968, 971–72 (Fed. Cir. 1999). But because two claims with different terminology can define the exact same subject matter,³ Federal Circuit has cautioned that “claim differentiation is a guide, not a rigid rule.” *Laitram Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1538 (Fed. Cir. 1991).

³ *Hormone Research Found. v. Genentech, Inc.*, 904 F.2d 1558, 1567 n. 15 (Fed. Cir. 1990)

In the event the language of the claim itself does not make the meaning of a claim term or phrase clear, specification is “the single best guide to the meaning of a disputed term” and is often “dispositive.” *Phillips*, 415 F.3d at 1315. Yet, courts must be cautious in using the specification to avoid importing into the claims embodiments described in the specification and thereby limiting the scope of the claims. In this respect, there is “a fine line between reading a claim in light of the specification, and reading a limitation into the claim from the specification.” *Id.* at 1323. Indeed, to read “a limitation from the written description into the claims” is a “cardinal sin” of patent claim construction. *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1340–41 (Fed. Cir. 2001).

A further important element of intrinsic evidence is the patent’s prosecution history—also commonly referred to as the patent’s “file wrapper”—which may be considered for the purpose of determining whether to “exclude any interpretation that was disclaimed during prosecution.” *Chimie v. PPG Indus., Inc.*, 402 F.3d 1371, 1384 (Fed. Cir. 2005) (citation and quotation marks omitted). Thus, if a patentee “has unequivocally disavowed a certain meaning to obtain his patent,” the claim is narrowed “congruent with the scope of surrender,” and the patentee may not later recapture through claim interpretation a claim term meaning disclaimed during prosecution and thereby recapture in the Markman process a scope of the patent surrendered during prosecution. *Id.* A patentee may not construe terms one way “in order to obtain their allowance and in a different way against accused infringers.” *Id.*

It is true, of course, that “a patentee is free to be his own lexicographer” and to give claim terms his own specific meaning. *Markman*, 52 F.3d at 980. When a patentee acts as his own lexicographer, he may “use terms in a manner other than their ordinary meaning[.]” *Vitronics*, 90 F.3d at 1582. Importantly, a patentee acting as his own lexicographer must “define the

specific terms used to describe his or her invention . . . with reasonable clarity, deliberateness, and precision.” *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). Thus, any statement in the specification relied on to support the contention that the patentee acted as his own lexicographer “must have sufficient clarity to put one reasonably skilled in the art on notice that the inventor intended to redefine the claim term.” *Merck & Co., Inc. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1370 (Fed. Cir. 2005). Although a patentee may “define claim terms by implication,” the implied redefinition must also “be so clear that it equates to an explicit one.” *Thorner v. Sony Computer Ent. Am. LLC*, 669 F.3d 1362, 1368 (Fed. Cir. 2012).

Particularly pertinent here is the claim construction principle that governs where a party to the claim dispute argues that a disputed claim term or phrase should be given its plain and ordinary meaning and no construction is necessary. That principle recognizes that courts are not required to construe every disputed term, for the overarching goal of claim construction is to aid the jury's understanding of claim terms, not to be an “exercise in redundancy.” *U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997). But “when reliance on a term's ‘ordinary’ meaning does not resolve the parties' dispute” and “the parties present a fundamental dispute regarding the scope of a claim term, it is the court's duty to resolve it.” *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1361–62 (Fed. Cir. 2008). Accordingly, if a claim term has more than one ordinary meaning, it must be construed. *Nystrom v. TREX Co.*, 424 F.3d 1136, 1143 (Fed. Cir. 2004). Furthermore, a court must construe a term if giving the term its plain and ordinary meaning will not address the disputed scope of the term, only its disputed meaning. *O2 Micro Int'l Ltd.*, 521 F.3d at 1361-62 (construing the term “only if” because giving the phrase its plain and ordinary meaning left open the question regarding the situations to which “only if” applied).

Thus, the claim construction analysis here begins with the application of these principles to the disputed claim terms and phrases. But importantly, as the Federal Circuit has noted, these “axioms themselves seldom provide an answer, but instead merely frame the question to be resolved.” *Liebel–Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 904 (Fed. Cir. 2004). Indeed, the Federal Circuit’s guidance on claim construction does “not attempt to provide a rigid algorithm, but simply attempt[s] to explain why, in general, certain types of evidence are more valuable than others.” *Phillips*, 415 F. 3d at 1324. It remains now to apply these principles to the portions of claims 1 and 22 in dispute here.

III.

A. “to each node P_i geographical coordinates x_i and y_i are assigned” (Claim 1) and “absolute coordinates” (Claim 22)

Dr. Adolph proposes that the plain and ordinary meaning of “node,” “geographical coordinates,” and “absolute coordinates” suffices for these terms and phrases, and thus, further construction is not required. TomTom disagrees, arguing that failure to construe these terms would not resolve a dispute in their meaning,⁴ and further arguing that “to each node P_i geographical coordinates x_i and y_i are assigned” should be construed as “to each intersection in a grid or road network Cartesian coordinates x and y , different from the latitude and longitude of that intersection, are assigned,” and “absolute coordinates” should be construed as “latitude and longitude.”

The parties’ competing constructions of these two phrases make clear that two aspects of construction are at issue: (1) whether “node” means “location reading” or the more restrictive “intersection in a grid or road network;” and (2) whether “geographical coordinates” may be

⁴ *O2 Micro Int’l Ltd.*, 521 F.3d at 1361.

given its plain and ordinary meaning or must instead be construed as “Cartesian coordinates, different from the latitude and longitude of that intersection.” The latter phrase, in turn, requires construction of the phrase “absolute coordinates” in dependent claim 22.

1. “node”

TomTom argues that the term “node” should be construed as “an intersection in a grid or road network,” while Dr. Adolph argues that “node” should be construed as “location reading.” Neither proposal is adequately faithful to the intrinsic evidence. As the specification makes clear, nodes can be any of the following:

- (1) “nodes at the intersection of sections,” Col. 10, ll. 17-18;
- (2) “nodes where the vehicle direction changes by more than a given predetermined value,” Col. 10, ll. 16-17; and
- (3) “origin and/or destination nodes,” Col. 12, l. 21.

TomTom argues in its brief that the ‘836 specification makes clear that only points lying at the intersection of a grid or road network are nodes. But restricting the term “node” to intersections would not encompass the types of nodes discussed elsewhere in the patent and would be unnecessarily confusing to a jury. Furthermore, Dr. Adolph’s definition—“location reading”—is far broader than the specification, which restricts nodes to certain types of locations. Accordingly, the term “node” must be construed as “intersection, origin, destination, or point at which the vehicle changes direction by more than a given predetermined value in a grid or road network.”⁵

⁵ The intrinsic evidence does not disclose or quantify the degree of change in direction that would create a node, nor do the parties argue how much the degree of change in direction should be. Presumably, this reflects that the degree of change in direction is not material to the parties’ infringement or validity positions.

2. “geographical coordinates x_i and y_i ” and “absolute coordinates”

Dr. Adolph argues that “geographical coordinates” in claim 1 and “absolute coordinates” in claim 22 must be given their plain and ordinary meaning. TomTom argues that “absolute coordinates” must be construed as “latitude and longitude,” and that “geographical coordinates” must be construed as “Cartesian coordinates, different from latitude or longitude.” Because TomTom offers no sound reason why the plain and ordinary meaning of the terms “geographical coordinates” and “absolute coordinates” is not adequate, the plain and ordinary meanings suffice to construe the terms.

First, TomTom argues that absolute coordinates in claim 22 and geographic coordinates in claim 1 must be different types of coordinates because of the doctrine of claim differentiation, which is “the presumption that each claim in a patent has a different scope.” *Versa Corp. v. Ag-Bag Int’l Ltd.*, 392 F.3d 1325, 1330 (Fed. Cir. 2004). TomTom states that “absolute coordinates” should be construed as “latitude and longitude” based on a sentence in the specification stating, “A navigational GPS (global positioning system) receiver produces data which give the geographical position of the control device of the mobile unit by, for instance, geographical latitude and longitude.” Col. 8, ll. 26-29. And because TomTom argues that the doctrine of claim differentiation prohibits assigning the same meaning to “absolute coordinates” in claim 22 and “geographic coordinates” in claim 1 from representing the same type of coordinates, TomTom proposes that “geographic coordinates” should be construed as “Cartesian coordinates x_i and y_i , different from latitude and longitude.”

Yet, using TomTom’s constructions poses three problems. First, the doctrine of claim differentiation does not apply to the term “geographic coordinates” in claim 1 and the term “absolute coordinates” in claim 22. Even if the coordinates discussed in the two claims had the

same meaning,⁶ claims 1 and 22 would still be different in scope, and hence claim differentiation would not apply. *Comark Communications, Inc.*, 156 F.3d at 1187 (stating the presumption that each claim in a patent must have a different scope). Claim 1, which discusses how geographical coordinates x_i and y_i are assigned to each node in a series of nodes that represents traveled distance data, does not mention determining coordinates via Global Positioning System (“GPS”). In contrast, claim 22 states a method, dependent on claim 1, “further comprising the step of determining absolute coordinates of the mobile unit using the Global Positioning System.” Col. 19, ll. 22-24. Thus, even if the “absolute coordinates” in claim 22 were the same type of coordinates as the “geographic coordinates” in claim 1, claim 22 would still be different in scope because it adds the step of determining those coordinates using a GPS. Accordingly, the claim differentiation principle does not support TomTom’s argument.

Second, TomTom’s construction of “geographic coordinates” is not supported by the intrinsic evidence. TomTom argues that “geographic coordinates” should be construed as “Cartesian coordinates,” but the phrase “Cartesian coordinates” does not appear in the claims, the specification, or the prosecution history. In fact, TomTom offers no persuasive argument in its briefs in support of using Cartesian coordinates, only claiming that “the ‘836 patent clearly contemplates using what both parties agree is a Cartesian system” based on the fact that Figures 3-10 in the specification “depict points ‘in a flat plane’ such that a point can be located by its distances from two intersecting straight lines.” *TomTom, Inc. v. AOT Systems GmbH, et al.*, 1:12-cv-528, Doc. 167 at *8 (E.D. Va. March 8, 2013). TomTom does not explain why the depiction of points in a flat plane compels an inference that geographic coordinates must be

⁶ Furthermore, as the Federal Circuit has stated, “two claims with different terminology can define the exact same subject matter.” *Curtiss-Wright Flow Control Corp. v. Velan, Inc.* 438 F.3d 1374, 1381 (Fed. Cir. 2006).

Cartesian coordinates, nor does TomTom cite to any other extrinsic or intrinsic evidence in support of that conclusion. TomTom's arguments are not sufficient to rebut the presumption that a plain and ordinary meaning of "geographic coordinates" is sufficient to define the term.⁷ Accordingly, "geographic coordinates" is construed according to its plain and ordinary meaning—that is, "coordinates that locate a node geographically."

Finally, TomTom's construction of "absolute coordinates" is not supported by the intrinsic evidence. TomTom states that its construction of the term "absolute coordinates" as "latitude and longitude" is supported by the specification, which states, "A navigational GPS (global positioning system) receiver produces data which give the geographical position of the control device of the mobile unit *by, for instance, geographical latitude and longitude.*" Col. 8, ll. 26-29 (emphasis added). But the portion of the specification cited by TomTom makes clear through use of the phrase "for instance" that "geographical latitude and longitude" is a *type* of absolute coordinate system used by the GPS, not the only possible absolute coordinate system used by the GPS. Thus, TomTom's argument is a violation of the principle that embodiments should not be used to limit the scope of a claim. *Phillips*, 415 F.3d at 1323. Accordingly, it is appropriate to construe "absolute coordinates" according to its plain and ordinary meaning, namely, that, "coordinates that locate a node geographically and represent the absolute position of the mobile unit."

B. "generating and updating data for use in" and "a destination tracking system of at least one mobile unit"

TomTom next seeks to construe the meaning of the phrases "generating and updating data for use in" and "a destination tracking system of at least one mobile unit," which appear in

⁷ *Phillips*, 415 F.3d at 1313 ("We have frequently stated that the words of a claim are generally given their ordinary and customary meaning.").

the preamble to claim 1. Dr. Adolph argues that construing the preamble is unnecessary because it merely states the purpose or intended use of the invention and therefore should not be treated as limiting the scope of the claim.

Dr. Adolph is correct that a preamble merely stating the purpose or intended use of the invention should not be used to limit the claim's scope. *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed. Cir. 1999). If the body of the claim "sets out the complete invention, the preamble is not ordinarily treated as limiting the scope of the claim." *Biocon, Inc. v. Straumann Co.*, 441 F.3d 945, 952 (Fed. Cir. 2006). Yet, as the Federal Circuit has also noted, "a preamble limits the invention if it recites essential structure or steps, or if it is 'necessary to give life, meaning, and vitality' to the claim." *Catalina Marketing International, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002). The preamble gives meaning to the claim when part of the claim relies on a preamble phrase for "antecedent basis," which indicates "a reliance on both the preamble and claim body to define the claimed invention." *Id.*⁸ If the claim drafter "chooses to use both the preamble and the body to define the subject matter of the claimed invention, the invention so defined, and not some other, is the one the patent protects." *Bell Communications Research, Inc. v. Vitalink Communications Corp.*, 55 F.3d 615, 620 (Fed. Cir. 1995).

Here, the preamble must be construed because part of the claim relies on the preamble for antecedent basis. The preamble to claim 1 states that it is "a method for generating and updating data for use in a destination tracking system of *at least one mobile unit*." Col. 17, ll. 36-37

⁸ See also *Biocon, Inc.*, 441 F.3d at 952-53 (finding a preamble limiting because "the body of the claim does not recite the complete invention, but refers back to the features...described in the preamble, so that the references...in the body of the claim derive their antecedent basis from the preamble").

(emphasis added). The first step of claim 1 refers to “said mobile unit.” Col. 17, l. 40. There is no other mobile unit mentioned before “said mobile unit” except in the preamble to claim 1. It is abundantly clear that the mobile unit referred to by the first step in claim 1 is the mobile unit in the preamble to claim 1. Thus, because claim 1 relies on its preamble for antecedent basis, the disputed claim terms in the preamble must be construed.⁹

1. “generating and updating data for use in...”

TomTom argues that the phrase “generating and updating data for use in...” in the preamble to claim 1 should be construed to clarify that “the data generated and updated by the mobile unit is used by that unit.”¹⁰ TomTom’s proposed construction is correct based on the specification and prosecution history of the ‘836 patent.

The patent specification explicitly distinguishes a “destination tracking system” that collects data and then uses the collected data, such as the destination tracking system described in the ‘836 patent, from a “traffic control system” that only collects data but does not use it. This distinction is explicitly recognized in the ‘836 patent specification, which, in describing prior art U.S. Pat. No. 4,350,970 A1, states:

[Patent ‘970] describes a method for recording the travel time of a vehicle between two given nodes, and for transmitting said travel times to a computer...Said master computer then compares the travel times with average values; if there are significant deviations, another route is proposed to subsequent vehicles. The transmitting vehicle does not receive the revised result. In other words it is a traffic control system and not a destination tracking system.

⁹ See, e.g., *Eaton Corp. v. Rockwell Intern. Corp.*, 323 F.3d 1332 (Fed. Cir. 2003) (finding the preamble to be limiting on a claim when the language of the claim referred to “said vehicle master clutch” and “said drive train,” which referred back to the particular clutch and the particular drive train described in the preamble)

¹⁰ Dr. Adolph does not offer a construction of this phrase because he argues that the preamble does not need to be construed.

The patent specification goes on to describe the '836 patent as using "section data file stored in the mobile unit [to extend and/or update continuously]" the route traveled by that mobile unit, which allows "a highly topical route recommendation [to be] presented, at any time," to that specific mobile unit. Col. 4, ll. 14-20. Thus, the specification clearly distinguishes the system described in the '836 patent from the system described in a prior patent, in which a vehicle's travel data was collected but not subsequently used by that vehicle. Furthermore, during the prosecution of the '836 patent, Dr. Adolph represented to the patent examiner, in attempting to distinguish claim 1 of the '836 patent from the Saito patent, "In the present invention, 'traveled distance data are generated *and are used* for automatically generating a digital route network." *TomTom, Inc. v. AOT Systems GmbH, et al.*, 1:12-cv-528, Doc. 183, Ex. K at *4 (E.D. Va. Mar. 8, 2013) (emphasis added). Accordingly, because intrinsic evidence clearly establishes that the invention both collects data and uses the collected data, the term "generating and updating data for use in..." in the preamble to claim 1 must be construed to mean that "the data generated and updated by the mobile unit is used by that unit."

2. "destination tracking system of at least one mobile unit"

TomTom argues that the phrase "a destination tracking system of at least one mobile unit" should be construed as "portable navigation device that does not contain initial information relating to existing road networks."¹¹ The prosecution history makes clear that TomTom's construction is correct.

During the prosecution of the '836 patent, Dr. Adolph argued that his claimed invention differed from the Saito patent because "Saito requires that an initial database representing road data or roadways be loaded into the system before the additional acquisition of data can take

¹¹ Dr. Adolph does not offer a construction of this phrase because he argues that the preamble does not need to be construed.

place,” while the ‘836 patent “allows even a single mobile unit to commence generating and storing data without the need for any additional information relating to existing road networks.” *TomTom, Inc. v. AOT Systems GmbH, et al.*, 1:12-cv-528, Doc. 167, Ex. F at *13 (E.D. Va. Feb. 22, 2013). Clearly, then, Dr. Adolph distinguished the ‘836 patent from prior art by pointing out that the ‘836 patent allows for generation of travel data “without the need for any initial database.” *TomTom, Inc. v. AOT Systems GmbH, et al.*, 1:12-cv-528, Doc. 167, Ex. C at *5 (E.D. Va. Feb. 22, 2013).

These representations made by Dr. Adolph during the prosecution of the ‘836 patent are binding during claim construction. As the Federal Circuit has stated, “prosecution history constitutes a public record of the patentee’s representations concerning the scope and meaning of the claims, and competitors are entitled to rely on those representations.” *Hockerson–Halberstadt, Inc. v. Avia Group Int’l, Inc.*, 222 F.3d 951, 957 (Fed. Cir. 2000). Where, as here, “an applicant argues that a claim possesses a feature that the prior art does not possess in order to overcome a prior art rejection, the argument may serve to narrow the scope” of the claim. *Seachange Intern., Inc. v. C-COR, Inc.*, 413 F.3d 1361, 1372-73 (Fed. Cir. 2005). To avoid the patent examiner’s argument that claim 1 of the ‘836 patent was anticipated by the Saito patent, Dr. Adolph argued during prosecution that, contrary to the Saito patent, the ‘836 patent does not require an initial map database.¹² Thus, Dr. Adolph overcame the Saito prior art by limiting claim 1 to a method that necessarily does not include an initial map database.¹³ Accordingly,

¹² *Brown v. 3M*, 265 F.3d 1349, 1351 (Fed. Cir. 2001) (stating that “when a claim covers several structures...the claim is deemed anticipated if any of the structures...within the scope of the claim is known in the prior art”).

¹³ See, e.g., *Computer Docking Station Corp. v. Dell Inc.*, 519 F.3d 1366, 1376-79 (Fed. Cir. 2008) (holding prosecution statements limiting when those statements distinguished prior art as

because claim 1 is narrowed by the prosecution history, “destination tracking system of at least one mobile unit” must be construed, as TomTom argues, as “destination tracking system of at least one mobile unit that does not contain initial information relating to existing road networks.”¹⁴

C. “section data” and “selecting, from the traveled distance data nodes P_j and P_k , which define contiguous sections P_jP_k ”

The second step of claim 1 claims the method for “generating and storing section data...said section data being generated by selecting, from the traveled distance data, nodes P_j and P_k , which define the contiguous sections P_jP_k .” The parties raise two disputes concerning the scope of claim limitations: (1) the definition of “section data,” and (2) how nodes are selected to generate section data.

1. “section data”

Dr. Adolph argues that the term “section data” can be given its plain and ordinary meaning and therefore need not be construed. TomTom argues that “section data” should be construed as “data generated from traveled distance data reflecting (a) that traveled nodes P_j and P_k are connected to each other, (b) the direction of travel from P_j to P_k , and (c) the distance traveled from P_j to P_k .” Contrary to Dr. Adolph’s argument, the plain and ordinary meaning does not suffice to define the term “section data,” because reliance on the plain and ordinary meaning of the term would not “resolve the parties’ dispute.” *O2 Micro Int’l Ltd.*, 521 F.3d at 1361.

“requiring a portable display and keyboard” whereas the invention did not require a built-in display and keyboard).

¹⁴ TomTom presents no argument or evidence why the phrase “destination tracking system” cannot be construed according to its plain and ordinary meaning and must instead be construed as “portable navigation device.”

TomTom's construction of the term, based on Dr. Adolph's representations during the prosecution history of the '836 patent, is correct.

Intrinsic evidence, specifically the prosecution history, makes clear that Dr. Adolph presented a definition of the term "section data" that is not the term's plain and ordinary meaning. In an attempt to distinguish the '836 patent from the Saito prior art, Dr. Adolph argued, "Claim 1 specifically claims that in its simplest implementation it not only records the geographic location of points P_j and P_k but the fact that they are connected to each other, that there is a direction of travel from P_j to P_k , and a traveled distance." *TomTom, Inc. v. AOT Systems GmbH, et al.*, 1:12-cv-528, Doc. 167, Ex. C at *3-4 (E.D. Va. Feb. 22, 2013). Thus, it is clear that Dr. Adolph disavowed a plain and ordinary meaning of the term "section data" when he presented this argument during the patent's prosecution history. *See Computer Docking Station*, 519 F.3d at 1374 (holding that a patentee disavows claim scope "by clearly characterizing the invention in a way to try to overcome rejections based on prior art").

Accordingly, based on the prosecution of the '836 patent, the term "section data" must be construed as "data generated from traveled distance data reflecting (a) that traveled nodes P_j and P_k are connected to each other, (b) the direction of travel from P_j to P_k , and (c) the distance traveled from P_j to P_k ."

2. "selecting, from the traveled distance data nodes P_j and P_k , which define contiguous sections P_jP_k "

Claim 1 requires that section data, as defined above, be generated by "selecting, from the traveled distance data nodes P_j and P_k , which define continuous sections P_jP_k ." The parties dispute how those nodes, which define a contiguous section, are selected. Dr. Adolph argues that the phrase should be construed as having its plain and ordinary meaning, and TomTom

argues that the phrase should be construed as “selecting from the traveled distance data, the nodes that are most characteristic of a road segment and dropping the intermediate nodes of that segment, whereby the end of one section is the start of the next section.” Dr. Adolph’s argument that the phrase does not need to be construed and may instead be given its plain and ordinary meaning is unpersuasive. Reliance on the plain and ordinary meaning of the phrase “does not resolve the parties’ dispute,”¹⁵ and the intrinsic evidence points persuasively to the construction of the phrase argued by TomTom.

The portion of the patent that describes the generation of section data teaches that “section data are generated from the traveled distance or route data stored in the trip storage unit, compressing the traveled distance data by dropping individual points...and choosing those points P_j and P_k , which are most...characteristic in defining a section of the route.” Col. 10, ll. 8-14. Thus, the patent specification teaches that generation of section data requires selecting “characteristic” nodes of a segment while dropping the nodes in between which are non-characteristic of that segment.

Furthermore, the patent prosecution history shows that claim 1 requires that the actual sections P_j and P_k are contiguous such that the end of one section is the start of the next section. To overcome a prior art rejection, Dr. Adolph argued during the prosecution that “additional sections are stored in a contiguous fashion in order to store a route connecting the initial starting point of the vehicle to the final destination.” Storing sections not connected to one another would not store a route connecting the initial starting point of the vehicle to the final destination, as required by the patent.

¹⁵ *O2 Micro Int’l Ltd.*, 521 F.3d at 1361.

Accordingly, the phrase “selecting, from the traveled distance data nodes P_j and P_k , which define continuous sections P_jP_k ” is construed as “selecting from the traveled distance data, the nodes that are most characteristic of a road segment and dropping the intermediate nodes of that segment, whereby the end of one section is the start of the next section.”

D. “storage device” claims

The parties next dispute the meaning of several phrases in claim 1 that use the term “storage device.” The first step of claim 1 requires “storing traveled distance data in at least one storage device.” The second and third steps of claim 1 then require, respectively, “storing section data in the storage device, and “storing the section data file in the storage device.”

1. “storing traveled distance data in at least one storage device”

Dr. Adolph argues that “storing traveled distance data in at least one storage device” should be given its plain and ordinary meaning. TomTom disagrees, arguing instead that the phrase should be construed to mean “storing in non-volatile memory the entire traveled distance data generated by a trip such that section data can then be generated.” TomTom’s argument, which relies on irrelevant expert testimony, is unpersuasive.

TomTom argues that the construction of “storage device” must be specified to make clear that storage devices must be something more than volatile or temporary RAM memory. Yet, TomTom does not cite to any intrinsic evidence on this point, nor can it do so, because the claim language, patent specification, and prosecution history are silent on the question of volatile and non-volatile memory. Instead, TomTom asserts that generating section data from stored traveled distance data requires “something more than volatile RAM memory, which is temporary storage incapable of retaining data for extended periods of time.” *TomTom, Inc. v. AOT Systems GmbH, et al.*, 1:12-cv-528, Doc. 167 at *22 (E.D. Va. Feb. 22, 2013). TomTom bases this assertion on

the testimony of Dr. Adolph's expert, who stated during a deposition, "Because I believe that Dr. Adolph, when he talks about these store [sic] units, I believe they are permanent storage units, and not just RAM." *TomTom, Inc. v. AOT Systems GmbH, et al.*, 1:12-cv-528, Doc. 167, Ex. D (E.D. Va. Feb. 22, 2013).

To be sure, where, as here, the intrinsic evidence is silent as to the meaning of a disputed claim term, it is appropriate to refer to extrinsic evidence to determine the meaning a person of ordinary skill in the art would give to the disputed claim term. *Atofina v. Great Lakes Chemical Corp.*, 441 F.3d 991 (Fed. Cir. 2006).¹⁶ Yet, TomTom's proffered expert evidence—the testimony of Dr. Adolph's expert—falls far short of being relevant or persuasive extrinsic expert testimony on the meaning that a person of ordinary skill in the art would give the disputed claim term "storage device." As the Federal Circuit has consistently noted, expert testimony consisting of conclusory statements or unsupported assertions is of little to no value, especially if the expert does not identify "a particular meaning in the art." *General Protecht Group, Inc. v. International Trade Com'n*, 619 F.3d 1303, 1310-1311 (Fed. Cir. 2010). In other words, "an expert's subjective understanding of a patent term is irrelevant." *Id.*¹⁷ Here, Dr. Adolph's expert's

¹⁶ See also *Symantec Corp. v. Computer Associates Intern, Inc.*, 522 F.3d 1279 (Fed. Cir. 2008) (approving the reference to a "dictionary of computing" for assistance in construing a term because the claim term language, specification, and prosecution history were silent on the term's meaning).

¹⁷ See also *Southern Mills, Inc. v. Polartec, LLC*, 377 Fed. Appx. 2, 6-7 (Fed. Cir. 2010) (finding expert's testimony unhelpful because it consisted only of a recitation of how the expert would construe the term, not an explanation of its "accepted meaning in the field to one skilled in the art"); *Symantec Corp.*, 522 F.3d at 1291 (stating that expert testimony that does not "identify the accepted meaning in the field to one skilled in the art is unhelpful"); *Sinorgchem Co., Shandong v. International Trade Com'n*, 511 F.3d 1132, 1137 (Fed. Cir. 2007) (accord[ing] little or no weight to expert testimony about the meaning of specification terms where the expert failed to present evidence of the generally accepted meaning of those terms to persons of ordinary skill in the art).

testimony is at most that expert's subjective understanding of the term "storage device" and is not testimony about the accepted meaning in the field to one skilled in the art. Accordingly, this testimony is irrelevant and unpersuasive.

In sharp contrast, Dr. Adolph's evidence regarding the plain and ordinary meaning of the term "storage device"—its definition in "Webster's New World History of Computer Terms"—is relevant and helpful. As the Federal Circuit has stated, "it is entirely appropriate for [a] district court to look to dictionaries or other extrinsic sources for context to aid in arriving at the plain meaning of a claim term." *Helmsderfer v. Bobrick Washroom Equip., Inc.*, 527 F.3d 1379, 1382 (Fed. Cir. 2008). Technical dictionaries such as the one cited by Dr. Adolph are especially helpful because they provide "the way in which one of skill in the art might use the claim terms." *Vitronics*, 90 F.3d at 1584 n. 6. Such technical dictionaries "endeavor to collect the accepted meanings of terms used in various fields of science and technology." *Phillips*, 415 F.3d at 1318. The technical dictionary cited by Dr. Adolph defines the term "storage device" as "[a] device used for storing data within a computer, such as a hard disk, floppy disk, magnetic tape, and RAM." Accordingly, the disputed claim term "storage device" is properly construed to have its plain and ordinary meaning, and it is appropriate to derive this plain and ordinary meaning from the technical dictionary as "device used for storing data." Furthermore, because TomTom presents no argument regarding construction of the rest of the phrase, the phrase "storing traveled distance data in at least one storage device" is construed according to its plain and ordinary meaning of "storing traveled distance data in at least one device used for storing data."

2. "storing section data/the section data file in the storage device"

The parties next dispute the meaning of the phrases "storing section data in the storage device" and "storing the section data file in the storage device." Dr. Adolph argues that the

phrases should be given their plain and ordinary meaning and therefore need not be construed. TomTom argues that the two phrases are indefinite because they lack an adequate antecedent basis and therefore cannot be construed. The first part of claim 1 refers to storing traveled distance data “in at least one storage device,” while parts two and three refer to storing data in “the storage device.” TomTom argues that, because parts two and three do not specify a specific storage device, those parts of the claim are indefinite. Because a person of ordinary skill in the art would be able to understand the meanings of the term, TomTom’s argument is unpersuasive.

The Federal Circuit has stated that a claim term is indefinite if “competitors trying to practice the invention or to design around it would be unable to discern the bounds of the invention.” *Morton Int’l, Inc. v. Cardinal Chem. Co.*, 5 F.3d 1464, 1470 (Fed. Cir. 1993). But “a claim is not indefinite merely because it poses a difficult issue of claim construction.” *Bancorp Servs., LLC v. Hartford Life Ins. Co.*, 359 F.3d 1367, 1371 (Fed. Cir. 2004). If the meaning of the claim is discernible, “even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree,” a claim should not be held invalid on indefiniteness grounds. *Exxon Research & Engineering Co. v. U.S.*, 265 F.3d 1371, 1375 (Fed. Cir. 2001). Moreover, the mere fact that there may not be an explicit antecedent basis for a term does not render it indefinite. Even lacking an explicit antecedent basis, a claim is not indefinite “if the scope of the claim would be reasonably ascertainable to those in the art.” *Bose Corp. v. JBL, Inc.*, 274 F.3d 1354, 1359 (Fed. Cir. 2001). Here, the meaning of the claim can be understood by persons of ordinary skill in the art when read in light of the specification, and thus the claim is not fatally indefinite. This is so because the specification makes clear that section data is stored in a “section data storage unit” storage device, section data files are stored in the “section data file storage unit” storage device, and “traveled distance data” is stored in a “trip

storage unit or motion storage unit” storage device. Col. 9, ll. 21-25. Despite the lack of explicit antecedent basis regarding where “section data” and “the section data file” are stored, a person of ordinary skill in the art would understand the meaning of claim 1 in light of the information contained in the patent specification, and thus, the phrases “storing section data in the storage device” and “storing the section data file in the storage device” are not indefinite.

Alternatively, TomTom argues that “storing section data in the storage device” should be construed as “storing, in a separate storage device than the traveled distance data and in non-volatile memory, the entire section data generated by a trip such that the section data file can then be generated,” and TomTom further argues that “storing section data file in the storage device” should be construed as “storing the section data file in non-volatile memory, in a separate storage device than the traveled distance data and section data.”¹⁸ Essentially, TomTom seeks to have these two terms construed to mean that “traveled distance data,” “section data,” and “section data file” are all stored in separate storage devices. As stated above, the patent specification makes clear that (i) traveled distance data is stored in a “trip storage unit or motion storage unit,” (ii) section data is stored in a “section data storage unit,” and (iii) the section data file is stored in the “section data file storage unit.” Thus, the portion of TomTom’s construction that clarifies that each type of data is stored in a different storage device is the correct construction. *See, e.g., Phillips*, 415 F.3d at 1315 (stating that, in the event the claim’s language does not make the meaning of a term or phrase clear, specification is “the single best guide to the meaning of a disputed term”). Accordingly, “storing section data in the storage device” is

¹⁸ Because the term “section data” is not construed to exclude volatile memory, the portions of TomTom’s proposed definitions relating to non-volatile memory are no longer relevant. Furthermore, TomTom presents no intrinsic or extrinsic evidence regarding the addition of the phrase “the entire section data generated by a trip such that the section data file can then be generated.” In fact, TomTom does not discuss this portion of its construction at all.

construed as “storing section data in a separate storage device than the traveled distance data,” and “storing the section file data in the storage device” is construed as “storing the section data file in a separate storage device than the traveled distance data and section data.”

IV.

For the reasons stated above, the disputed portions of Claim 1 are determined to have the following constructions:

- **“to each node P_i geographical coordinates x_i and y_i are assigned”**

Definition: “to each intersection, origin, destination, or point at which the vehicle changes direction by more than a predetermined value in a grid or road network geographical coordinates x_i and y_i are assigned”

- **“generating and updating data for use in...”**

Definition: “generating and updating data for use in” requires that “the data generated and updated by the mobile unit is used by that unit.”

- **“destination tracking system of at least one mobile unit”**

Definition: “destination tracking system of at least one mobile unit that does not contain initial information relating to existing road networks”

- **“section data”**

Definition: “data generated from traveled distance data reflecting (a) that traveled nodes P_j and P_k are connected to each other, (b) the direction of travel from P_j to P_k , and (c) the distance traveled from P_j to P_k .”

- **“selecting from the traveled distance data, nodes P_j and P_k , which define contiguous sections P_jP_k ”**

Definition: "selecting from the traveled distance data, the nodes that are most characteristic of a road segment and dropping the intermediate nodes of that segment, whereby the end of one section is the start of the next section"

- **"storing traveled distance data in at least one storage device"**

Definition: The plain language is adequately clear and needs no further definition.

- **"storing section data in the storage device"**

Definition: "storing section data in a separate storage device than the traveled distance data"

- **"storing the section data file in the storage device"**

Definition: "storing the section data file in a separate storage device than the traveled distance data and section data"

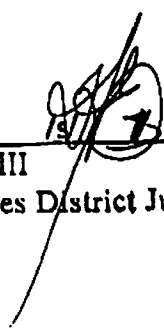
The disputed portion of Claim 22 is determined to have the following construction:

- **"absolute coordinates of the mobile unit"**

Definition: The plain language is adequately clear and needs no further definition.

An appropriate Order will issue.

Alexandria, Virginia
February 25, 2014



T. S. Ellis, III
United States District Judge