United States District Court,
District of Columbia.

JUNIPER NETWORKS, INC,
Plaintiff.
v.
Abdullah Ali BAHATTAB,
Defendant.

Civil Action No. 07-1771 (PLF)(AK)

May 8, 2009.

Alan M. Fisch, Kaye Scholer, LLP, Coke Morgan Stewart, David Laurent Cousineau, Jason F. Hoffman, Kaye Scholer LLP, Washington, DC, for Plaintiff.

Dirk D. Thomas, Henry Winchester Asbill, Andre J. Bahou, Dewey & Leboeuf, LLP, Washington, DC, for Defendant.

MEMORANDUM OPINION AND ORDER FN1

FN1. United States District Judge Paul Friedman referred this matter to the undersigned for Full Case Management, including all pre-trial matters. (*See* Referral Order [22].)

ALAN KAY**, United States Magistrate Judge.**

Pending before the Court is the issue of claim construction of certain terms FN2 in U.S. Patent No. 6,816,457 ("'457 Patent"). Pursuant to Markman v. Westview Instruments, Inc., 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996), the Court is called upon to construe, as a matter of law, disputed patent claim terms. The Court held a hearing on claim construction ("*Markman* hearing") on April 3, 2009, where the parties presented argument on the disputed claim language. Upon consideration of the record and memoranda submitted by the parties, and the parties' presentations at the *Markman* hearing, the Court construes the terms as set forth and explained below.

FN2. While the parties initially proposed four terms for construction and have subsequently altered their construction proposals, the Court has determined that only two claim terms require construction. *See* n. 4, *infra*.

I. *Background*

Dr. Abdullah Ali Bahattab ("Defendant"), a citizen and resident of Saudi Arabia and former resident of

Chicago, Illinois, is the owner of United States Patent No. 6,816,457 ("the '457 Patent"), titled "Predictive Routing Table Cache Population," which issued on November 9, 2004. (Compl. [1] para. 3; Def.'s Mot. Summ. J. [18] 2.) The subject matter of the '457 Patent is identical to that of a paper titled "Predicting IP Addresses to Speed Up Routing Lookup" ("Predicting IP Addresses") that Defendant published in connection with the April 2000 Advanced Simulation Technologies Conference. (Compl.para. 20.) "Predicting IP Addresses" lists four authors: Abdullah Bahattab, Bohdan Bodnar, George Kraft, and Martha Evens. (Id.) On June 2, 2000, Defendant filed his Provisional Patent Application and listed "Predicting IP Addresses" in the bibliography. (Def.'s Mot. Summ. J. 1.) Two months later, Defendant filed his non-provisional Patent Application, which led to the issuance of the '457 Patent. (Id. 2.) The '457 Patent lists Defendant as the sole inventor. ('457 Patent, Ex. A to Compl. 2].)

On January 29, 2005, Defendant sent an e-mail to Chris Moore, Regional Sales Manager for Juniper Networks (Middle East) FN3, stating his intent to file suit against Juniper ("Plaintiff") for infringement of the ' 457 Patent. (E-mail from Dr. Bahattab to Moore, Ex. B to Compl. 3.) On May 30, 2005, Steven Wood, identifying himself as counsel for Defendant, sent a letter to Plaintiff indicating that Juniper's JUNOS enterprise router may infringe the ' 457 Patent. (Letter from Wood to Gaynor, Ex. C to Compl. 4.) Finally, on April 18, 2007, Defendant filed an action in the Dubai Court of First Instance against Juniper Networks (Middle East) claiming that Juniper Networks (Middle East) manufactures, uses and sells products that infringe at least one claim of the ' 457 Patent. (Compl.para. 11.)

FN3. According to Juniper, "Juniper Networks (Middle East) is the operating name of Juniper Networks Ireland Limited, which is a wholly owned subsidiary of Juniper" Networks, Inc. (Compl.para. 9.)

While the litigation was pending in the United Arab Emirates, Juniper filed a three count Complaint for Declaratory Judgment against Dr. Bahattab in the instant case. (*See generally* Compl.) In Count I, Plaintiff alleges that the ' 457 Patent is invalid for failure to satisfy the provisions of 35 U.S.C. s.s. 102 and 103 and because Defendant failed to include all of the inventors on his patent application, in violation of 35 U.S.C. s.s. 102(f) and 116. (Compl.para.para. 15, 16.) In Count II, Juniper alleges that the '457 Patent is unenforceable because of Dr. Bahattab's inequitable conduct, namely his failure to disclose to the United States Patent and Trademark Office ("Patent Office") all of the inventors of the '457 Patent during the patent prosecution process. (Id. para.para. 18, 19.) Specifically, Juniper alleges that Drs. Bodnar, Kraft, and Evens were co-inventors of the '457 Patent and therefore Dr. Bahattab was required to list their names on his patent application. (Id. para.para. 20-26.) Finally, in Count III, Juniper alleges that it "has not directly infringed, contributed to the infringement, or actively induced infringement of any claim of the '457 Patent." (Id. para. 29.)

II. ***Claim Construction of the*** '457 Patent

The Court construes the following two terms in the claims of the '457 Patent: (1) Autoregressive Moving Average; and (2) Routing Table Cache. FN4

FN4. Several terms that were initially proposed for claim construction need not be construed by the Court. First, the parties have agreed that the term "Temporal Model" is "a mathematical characterization or summarization of a set of observations over time." (*See* Pl.'s Responsive Markman Brief ("Pl.'s Resp.") at 21, Def.'s Opening Claim Construction Brief ("Def.'s Br.") at 12.) In light of this agreement, the terms "Building a Temporal Model" and "Based on a Temporal Model" do not require construction because the

ordinary meaning of the terms "building" and "based on" would readily be understood through their ordinary and common meaning by one of ordinary skill in the art. *See* Philips v. AWH Corp., 415 F.3d 1303, 1312 (Fed.Cir.2005) (claim terms are generally given their ordinary and customary meaning); (see also Pl.'s Resp. at 20 ("The claim terms [above] require no construction, as one of ordinary skill in the art would understand their meaning without construction."); Def.'s Br. at 20 n. 54 ("the term "based on" has a widely understood meaning that may not warrant further construction").

Finally, the Court need not construe, as Plaintiff proposes, the claim term "Populating a Routing Table Cache Based on Said Temporal Model And At Least One Entry That Is Stored In A Routing Table" because one of ordinary skill in the art would understand the term without further construction in light of the parties' agreement with respect to the construction of "Temporal Model" and this Court's construction of "Routing Table Cache". Furthermore, one of ordinary skill in the art would also understand the term "Populating" and the rest of the claim terms proposed for construction based on their ordinary meaning without construction. Claim construction is a question of law that begins "with the words of the claim[s] [themselves]." Mars, Inc. v. H.J. Heinz Co., 377 F.3d 1369, 1373 (Fed.Cir.2004); Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (Fed.Cir.1995), *aff'd,* 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996). The words of a claim are generally given their ordinary and customary meaning, which is the "the meaning that the [claim] term would have to a person of ordinary skill in the art in question at the time of the invention." Philips v. AWH Corp., 415 F.3d 1303, 1312-13 (Fed.Cir.2005). "Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." Id. at 1313. The claims, therefore, "must be read in view of the specification, of which they are a part." Id. at 1315 (citing Markman, 52 F.3d at 979).

"To determine the meaning of the claims, the court must first look to the intrinsic evidence of record." Intervet, Inc. v. Merial Limited, No. 06-658, 2007 WL 5685349, at * 2 (D.D.C. Nov.28, 2007) (citing Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed.Cir.1996). Intrinsic evidence includes "the patent itself, including the claims, the specification, and, if in evidence, the prosecution history." *Id*. Extrinsic evidence, such as dictionaries, technical treatises and articles, may be considered if there is still doubt regarding the meaning of the claims after review of the intrinsic evidence. *Id*. Such extrinsic evidence, however, "is less significant than the intrinsic record in determining the legally operative meaning of claim language." Phillips, 415 F.3d at 1317-18 (citations omitted).

(1) ***Autoregressive Moving Average***

The Court construes the term "autoregressive moving average" to mean:

"the mathematical model:

$$W_t = \sum_{t=1}^{p} (\text{sigma}) (\text{phi})_l W_{t-l} - \sum_{J=1}^{q} (\text{sigma}) (\text{theta})_t a_{t-j} + a_t$$

where (phi) is the autoregressive parameter, which described the effect of unit change in W t-l on W t, p refers to the number of autoregressive parameters, (theta) is the moving average parameter, q refers to the

number of moving average parameters, and a *t* is the white noise error.

The central dispute between the parties on the construction of autoregressive moving average ("ARMA") focuses on whether the scope of the term includes, as Plaintiff proposes, only the particular ARMA model disclosed by Dr. Bahattab in his provisional patent application and the specification to the patent, or whether, as Defendant proposes, the term should include a broader scope that includes other formulations of, and variations on, ARMA including, for example, integrated ARMA models ("ARIMA").FN5 Plaintiff argues that Defendant's proposed construction is impermissibly broad and ignores the amendment that Defendant made to his patent application in order to obtain his patent which disclaimed other temporal models beyond ARMA. (Pl.'s Resp. at 2-5.) Plaintiff further contends that Defendant's proposed construction would render the claims invalid for lack of enablement. (*Id*. at 5-10.) Defendant argues that limiting the construction to a mathematical equation is unhelpful to the fact finder and is an improper incorporation of a limitation from the patent specification. (Def.'s Resp. at 2-6.) Rather, Defendant contends, his provisional patent application expressly recognized that a range of autoregressive moving average models may be appropriate for his invention. (Def.'s Br. at 9-10.) The Court concludes that Plaintiff is correct in its assertion that Defendant disclaimed all temporal models other than ARMA during the course of his patent prosecution and that Defendant is now limited to the particular, and only, ARMA formula discussed in his application materials.

FN5. Defendant's proposed construction of autoregressive moving average was: "a statistical characterization of time series data based on an autoregressive model of order *p* and a moving average of order q, such as the Box-Jenkins model." (Def.'s Br. at 6.) Subsequent to the *Markman* hearing, Defendant eliminated the last clause, "such as the Box-Jenkins model," from his proposed construction. (*See* Def.'s Post-Hearing Br. at 2.)

Defendant's patent application contained four proposed claims, two of which were dependent claims relating to the use of ARMA in a router. (*See* Pl.'s Br. Ex. 5 at J000170 ("Patent Application".) The independent claims recited a "temporal model," and the dependent claims recited that "said temporal model is based on the autoregressive moving average of the occurrence of said destination addresses." (*Id*.) Defendant's provisional application, which was incorporated by reference into the non-provisional application and patent (*Id*. at J000158; '457 patent, col. 1, Ins. 6-18.), listed eight potentially useful types of temporal models, including, *inter alia,* moving average processes, autoregressive processes, Mixed autoregressive/moving-average processes (ARMA models), and Integrated autoregressive integrated moving average processes (ARIMA models). (Pl.'s Br. Ex. 3 at J000035 ("Provisional Application").) The provisional application also identified a specific ARMA formulation used in the invention. (Provisional Application at J000076.) Upon review of the non-provisional application, the Patent Examiner rejected both independent claims as anticipated by the prior art, and objected to the two ARMA-related dependent claims "as being dependent on a rejected base claim," but concluded that those claims "would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims." (PL's Br. Ex. 6 at J000186-191 ("Office Action").)

In response, Dr. Bahattab amended the independent claims by narrowing them to the use of the autoregressive moving average of the occurrence of destination addresses. (PL's Br. Ex. 7 at J000194-199 ("2004 Amendment").) Dr. Bahattab explained that the prior art did not "teach or suggest, alone or in combination with the other references, what claim 1 recites-namely that the temporal model [used] is based on the autoregressive moving average of the occurrence of the destination addresses." (*Id*. at J000196.) The '457 Patent then issued with two claims containing the limitation: "wherein said temporal model is based on

the autoregressive moving average of the occurrence of said destination addresses." ('457 patent, col. 10,1ns. 12-47.) It is clear from this action, therefore, that Defendant limited his claims, at a maximum, to the use of autoregressive moving average models and disclaimed the use of all other types of temporal models. *See, e.g.,* Chimie v. P.P.G. Indus., Inc., 402 F.3d 1371, 1384 (Fed.Cir.2005) ("[t]he purpose of consulting the prosecution history in construing a claim is to exclude any interpretation that was disclaimed during prosecution.") (citation omitted); Voda v. Cordis Corp., 536 F.3d 1311, 1325 (Fed.Cir.2008) (*quoting Festo Corp. Shoketsu Kinzoku Kogyo Kabushiki Co.,* 525 U.S. 722, 740-41 (2002) ("[a] patentee's decision to narrow his claims through amendment may be presumed to be a general disclaimer of the territory between the original claim and the amended claim.").

Defendant argues that language he included in the patent specification and provisional application refutes such a narrow interpretation of autoregressive moving average, and that a proper construction should not foreclose other types of temporal models such as "autoregressive moving averages with additional features, such as integrated models (also known as Integrated ARMA models)." (Def.'s Br. at 11.) For example, the '457 patent specification, after citing the autoregressive moving average equation used in the illustrative embodiment, states:

[i]t will be clear to those skilled in the art, however, that in alternative embodiments of the present invention other temporal model structures can be used. For example, one temporal model structure can be used for all the data sets which obviates the necessity for computing autocorrelation of each data set and of categorizing each data set based on its correlation value. Furthermore, it will be clear to those skilled in the art how to categorize each data set into two or more categories and to select different temporal model structures for each category. And still furthermore, it will be clear to those skilled in the art how to choose different temporal model structures other than those shown above.

('457 Patent, col. 8, Ins. 36-47.) FN6 This same language, however, is also found in Defendant's patent application that included the initially proposed broad claim language which was later rejected by the Patent Examiner. (*See* Patent Application at J000167.) The language, therefore, initially related to and contemplated broadly defined claims that included the concept of temporal models generally and were not yet limited solely to an autoregressive moving average model. Defendant's subsequent disclaimer of other temporal models during patent prosecution and limitation of the claim language to a autoregressive moving average model therefore must also limit the breadth and impact of this language from the patent specification. To do otherwise would be to ignore a key stage in the prosecution of the patent.

FN6. Defendant also points to language in his provisional application as further indicating that a range of autoregressive moving average models might be used in the invention. (Def.'s Br. at 9.) Such language, however, completely predates Defendant's disclaimer and limitation of the scope of his claims during patent prosecution.

The remaining question, then, is whether Defendant limited himself to the specific ARMA formula cited in the patent specification rather than ARMA models generally. Defendant argues that limiting the claims to an exemplary mathematical equation from the patent specification is improper because the formula was merely illustrative and its inclusion did not demonstrate a clear intention to limit the claims. (*See* Def.'s Post-Hearing Br. at 5-6.) While the autoregressive moving average equation is described in the patent specification only as being used by the illustrative embodiment, no other ARMA formulation is described. ('457 patent, col. 8, Ins. 19-28.) Plaintiff argues that Defendant's proposed construction is too broad to be

fully enabled, as one of ordinary skill in the art would be forced to guess or experiment to determine which other ARMA models covered by the proposed construction might work. (Pl.'s Post-Hearing Br. at 16-17.)

Because, upon review of the claims, specification, and prosecution history, the Court finds the claims ambiguous as to whether they encompass only the specific ARMA formulation cited in the specification or whether they include a broad range of potential ARMA formulations, the Court will construe the claims to preserve their validity. *See* Liebel-Flarshiem Co. v. Medrad, Inc., 358 F.3d 898, 911 (Fed.Cir.2004) ("unless the court concludes, after applying all the available tools of claim construction, that the claim is still ambiguous, the axiom regarding the construction to preserve the validity of the claim does not apply.") The Patent Act requires that the specification "contain a written description of the invention, and of the manner and process of making and using it, in such full clear, concise and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same." 35 U.S.C. s. 112. A patentee who seeks broad claim language "must make sure the broad claims are fully enabled." Sitrick v. Dreamworks, LLC, 516 F.3d 993, 999 (Fed.Cir.2008). Defendant's proposed construction would result in claims broad enough in scope to potentially encompass temporal models well beyond ARMA. Plaintiff is correct, however, that neither the provisional application nor the patent specification enable the claims beyond the particular ARMA formulation cited. While they may contemplate a more expansive scope than one specific formula, none of the statements from the specification or provisional application as referenced by Plaintiff provide a clear and concise description of the other potential temporal structures envisioned such that one of ordinary skill in the art could practice the invention using them. Furthermore, there is no description in the intrinsic record of a range of possible ARMA formulations that might be used in the invention or readily ascertained by one skilled in the art.FN7 A person skilled in the art, as Plaintiff suggests, would be forced to experiment to find alternative ARMA formulations to be used, and the claim would fail for lack of enablement. Therefore, the Court concludes that in order to preserve claim validity, the claim language must be construed to encompass only the specific ARMA formulation cited in the claim specification.

FN7. Nor has Defendant proffered any.

(2) *Routing Table Cache*

The Court construes the term "routing table cache" to mean: "local memory containing a small part of the destination addresses in the routing table and its function is to speed up the lookup of destination addresses by attempting to hold the most frequently accessed entries of the routing table."

Plaintiff's proposed construction of routing table cache, which the Court adopts in full, is fully supported by the intrinsic evidence.FN8 The first portion of the construction-that the routing table cache comprises "local memory"-is fully supported by the figures, specification and prosecution history. (*See, e.g.,* Fig. 2 (showing the routing table cache contained within the "memory" of the input port); Provisional Application at J000018 ("The cache contains a small part of the IP addresses of the routing table, and its function is to speed the lookup for IP addresses since the search in the *local RAM* is much faster than in the centralized routing table.") (emphasis added).) The second component of the Plaintiff's proposed construction-that the routing table cache contains "a small part of the destination addresses in the routing table"-is also supported by the specification and the prosecution history. Defendant's provisional application recites that the routing table cache "contains a small part of the IP addresses of the routing table." (Provisional Application at J000018). Furthermore, the specification teaches that the "number of entries in routing table cache 203 is

typically orders of magnitude smaller than the number of entries in routing table 104." (' 457 Patent col. 4, Ins. 26-29.)

FN8. Defendant's proposed construction, as revised in his post-hearing brief, is "an area of memory devoted to the retrieval of specified data where the specified data is routing table data." (Def.'s Post-Hearing Br. at 2.)

Finally, the third component of Plaintiff's proposed construction-that the routing table cache's function "is to speed up the lookup of destination addresses by attempting to hold the most frequently accessed entries of the routing table"-is also fully supported by the specification and prosecution history. The provisional applications states that the routing table cache's function is to "to speed the lookup for IP addresses since the search in the local RAM is much faster than in the centralized routing table." (Provisional Application at J000018.) Furthermore, the specification teaches that the routing table cache accomplishes a faster speed by "advantageously hold[ing] the most frequently accessed entries of routing table 104," ('457 Patent, col. 3, In. 67-col. 4, In. 3.) and that "the speed of router 100 is improved by having a small cache that is populated so as to have as high a hit ratio as possible." ('457 Patent, col. 4, Ins. 51-54.)

III. Conclusion

For the foregoing reasons, it is this 5th day of May, 2009, hereby **ORDERED** that the disputed claim terms are construed as follows:

(1) **Autoregressive moving average:**

The mathematical model:

$$W_t = \sum_{t=1}^{p} \varphi_l W_{t-l} + \sum_{J=1}^{q} \theta_l a_{t-J} + a_t$$

where (phi) is the autoregressive parameter, which described the effect of unit change in W t-l on W t, p refers to the number of autoregressive parameters, (theta) is the moving average parameter, q refers to the number of moving average parameters, and a t is the white noise error.

(2) Routing table cache: local memory containing a small part of the destination addresses in the routing table and its function is to speed up the lookup of destination addresses by attempting to hold the most frequently accessed entries of the routing table.

D.D.C.,2009.
Juniper Networks, Inc. v. Bahattab

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