

**UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
SHERMAN DIVISION**

MOBILITY WORKX, LLC,	§	
	§	
v.	§	CIVIL ACTION NO. 4:17-CV-567
	§	Judge Mazzant
T-MOBILE US, INC., et al.	§	
	§	

CLAIM CONSTRUCTION MEMORANDUM OPINION AND ORDER

Before the Court are Plaintiff Mobility Workx, LLC’s (“Mobility”) Opening Claim Construction Brief (Dkt. #33), Defendants’ T-Mobile US, Inc., T-Mobile USA, Inc. f/k/a MetroPCS Communications Inc. and f/k/a MetroPCS Wireless, Inc., and MetroPCS Texas LLC (“T-Mobile”) Responsive Claim Construction Brief (Dkt. #35), and Plaintiff’s Reply Claim Construction Brief (Dkt. #36). Also before the Court are the parties’ April 23, 2018 Joint Claim Construction and Prehearing Statement (Dkt. #30) and the parties’ July 2, 2018 Joint Claim Construction Chart (Dkt. #38 at Exhibit A). The Court held a claim construction hearing on July 10, 2018, to determine the proper construction of the disputed claim terms in United States Patents No. 7,697,508 (“the ’508 Patent”) and 8,213,417 (“the ’417 Patent”) (collectively, “the patents-in-suit”).

The Court issues this Claim Construction Memorandum Opinion and Order and hereby incorporates-by-reference the claim construction hearing and transcript as well as the demonstrative slides presented by the parties during the hearing. For the following reasons, the Court provides the constructions set forth below.

BACKGROUND

Plaintiff brings suit alleging infringement of United States Patents No. 7,697,508 and 8,213,417. The '508 Patent, titled "System, Apparatus, and Methods for Proactive Allocation of Wireless Communication Resources," issued on April 13, 2010, and bears an earliest priority date of July 31, 2003. The '417 Patent is a continuation of the '508 Patent and issued on July 3, 2012. Plaintiff submits that the patents-in-suit relate to "reducing registration overhead and setup times associated with mobile node handoffs." (Dkt. #33 at p. 2). The Abstracts of the '508 Patent and the '417 Patent are the same and state:

A system for communication between a mobile node and a communications network is provided for use with a communications network having one or more communications network nodes that define a foreign agents [*sic*] and that communicate with the mobile node in a predefined region. The system includes a ghost-foreign agent that advertises a foreign agent so that the mobile node is aware of the foreign agent when the mobile node is located outside the predefined region. The system further includes a ghost-mobile node that signals the foreign agent in response to the foreign agent advertising and based upon a predicted future state of the mobile node.

LEGAL STANDARD

Claim construction is a matter of law. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995). The purpose of claim construction is to resolve the meanings and technical scope of claim terms. *U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997). When the parties dispute 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, 1362 (Fed. Cir. 2008).

"It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.'" *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). The Court examines a patent's intrinsic evidence to define the patented invention's scope. *Id.* at 1313–14; *Bell Atl. Network Servs., Inc. v. Covad Commc'ns*

Group, Inc., 262 F.3d 1258, 1267 (Fed. Cir. 2001). Intrinsic evidence includes the claims, the rest of the specification, and the prosecution history. *Phillips*, 415 F.3d at 1312–13; *Bell Atl. Network Servs.*, 262 F.3d at 1267. The Court gives claim terms their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention. *Phillips*, 415 F.3d at 1312–13; *Alloc, Inc. v. Int’l Trade Comm’n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003).

Claim language guides the Court’s construction of claim terms. *Phillips*, 415 F.3d at 1314. “[T]he context in which a term is used in the asserted claim can be highly instructive.” *Id.* Other claims, asserted and unasserted, can provide additional instruction because “terms are normally used consistently throughout the patent.” *Id.* Differences among claims, such as additional limitations in dependent claims, can provide further guidance. *Id.*

“[C]laims ‘must be read in view of the specification, of which they are a part.’” *Id.* at 1315 (quoting *Markman*, 52 F.3d at 979). “[T]he specification ‘is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.’” *Id.* (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex, Inc. v. Ficoso N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). In the specification, a patentee may define his own terms, give a claim term a different meaning than it would otherwise possess, or disclaim or disavow some claim scope. *Phillips*, 415 F.3d at 1316. Although the Court generally presumes terms possess their ordinary meaning, this presumption can be overcome by statements of clear disclaimer. See *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1343–44 (Fed. Cir. 2001). This presumption does not arise when the patentee acts as his own lexicographer. See *Irdeto Access, Inc. v. EchoStar Satellite Corp.*, 383 F.3d 1295, 1301 (Fed. Cir. 2004).

The specification may also resolve ambiguous claim terms “where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone.” *Teleflex*, 299 F.3d at 1325. For example, “[a] claim interpretation that excludes a preferred embodiment from the scope of the claim ‘is rarely, if ever, correct.’” *Globetrotter Software, Inc. v. Elan Computer Group Inc.*, 362 F.3d 1367, 1381 (Fed. Cir. 2004) (quoting *Vitronics*, 90 F.3d at 1583). But, “[a]lthough the specification may aid the court in interpreting the meaning of disputed language in the claims, particular embodiments and examples appearing in the specification will not generally be read into the claims.” *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988); *accord Phillips*, 415 F.3d at 1323.

The prosecution history is another tool to supply the proper context for claim construction because a patentee may define a term during prosecution of the patent. *Home Diagnostics Inc. v. LifeScan, Inc.*, 381 F.3d 1352, 1356 (Fed. Cir. 2004) (“As in the case of the specification, a patent applicant may define a term in prosecuting a patent”). The well-established doctrine of prosecution disclaimer “preclud[es] patentees from recapturing through claim interpretation specific meanings disclaimed during prosecution.” *Omega Eng’g Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003). “Indeed, by distinguishing the claimed invention over the prior art, an applicant is indicating what the claims do not cover.” *Spectrum Int’l v. Sterilite Corp.*, 164 F.3d 1372, 1378–79 (Fed. Cir. 1988) (quotation omitted). “As a basic principle of claim interpretation, prosecution disclaimer promotes the public notice function of the intrinsic evidence and protects the public’s reliance on definitive statements made during prosecution.” *Omega Eng’g*, 334 F.3d at 1324. However, the prosecution history must show that the patentee clearly and unambiguously disclaimed or disavowed the proposed interpretation during prosecution to obtain claim allowance.

Middleton Inc. v. 3M Co., 311 F.3d 1384, 1388 (Fed. Cir. 2002). Statements will constitute disclaimer of scope only if they are “clear and unmistakable statements of disavowal.” *See Cordis Corp. v. Medtronic AVE, Inc.*, 339 F.3d 1352, 1358 (Fed. Cir. 2003). An “ambiguous disavowal” will not suffice. *Schindler Elevator Corp. v. Otis Elevator Co.*, 593 F.3d 1275, 1285 (Fed. Cir. 2010) (citation omitted).

Although “less significant than the intrinsic record in determining the legally operative meaning of claim language,” the Court may rely on extrinsic evidence to “shed useful light on the relevant art.” *Phillips*, 415 F.3d at 1317 (quotation omitted). Technical dictionaries and treatises may help the Court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but such sources may also provide overly broad definitions or may not be indicative of how terms are used in the patent. *Id.* at 1318. Similarly, expert testimony may aid the Court in determining the particular meaning of a term in the pertinent field, but “conclusory, unsupported assertions by experts as to the definition of a claim term are not useful.” *Id.* Generally, extrinsic evidence is “less reliable than the patent and its prosecution history in determining how to read claim terms.” *Id.*

The Supreme Court of the United States has “read [35 U.S.C.] § 112, ¶ 2 to require that a patent’s claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129 (2014). “A determination of claim indefiniteness is a legal conclusion that is drawn from the court’s performance of its duty as the construer of patent claims.” *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005) (citations and internal quotation marks omitted), *abrogated on other grounds by Nautilus*, 134 S. Ct. 2120.

ANALYSIS¹

Agreed Claim Terms

The parties submitted the following agreements in their April 23, 2018 Joint Claim Construction and Prehearing Statement (Dkt. #30) and their July 2, 2018 Joint Claim Construction Chart (Dkt. #38 at Exhibit A), which the Court hereby adopts as agreed-upon:

<u>Term</u>	<u>Agreed Construction</u>
“mobile node” (’508 Patent, Claims 1, 2;)417 Patent, Claims 1, 4, 7)	Plain and ordinary meaning
“proxy element” (’417 Patent, Claim 4)	Plain and ordinary meaning
“the ghost-foreign agent is responsive to . . . a predetermined threshold” (’508 Patent, Claim 5)	Plain and ordinary meaning

¹ Plaintiff states in its reply brief: “Plaintiff objects to Defendants’ use of Dr. Helal’s, Dr. Hernandez’s, and Mr. Blackburn’s deposition transcripts as they are unauthenticated. Defendants’ citation to certain excerpts of deposition testimony in their Responsive Claim Construction brief is improper, as the deposition transcripts have not been signed as of this filing, and are still being reviewed by the aforementioned.” (Dkt. #36 at p. 2 n.1). Plaintiff has not filed a motion to strike, so there is no pending motion upon which the Court could rule. To whatever extent Plaintiff’s “object[ions]” are proper, Plaintiff’s requests are: (1) denied as moot as to Dr. Helal and Dr. Hernandez, because the Court has not herein relied upon the deposition transcripts as to Dr. Helal or Dr. Hernandez; and (2) denied as to Mr. Blackburn because, if for no other reason, Plaintiff has itself submitted and cited portions of Mr. Blackburn’s deposition transcript (*see* Dkt. #33 at Exhibit 3C; *see also* Dkt. #33 at pp. 17, 21, 28 & 29). Plaintiff also states that it “objects to Defendants’ reference to any Exhibits included in its Responsive Claim Construction Brief, as unauthenticated to the extent possible.” (Dkt. #36 at p. 2 n.1). This purported objection is improper as it does not identify any specific evidence or any particular basis for objection. Finally, Plaintiff argues that the declaration submitted by Defendants’ counsel as to the exhibits attached to Defendants’ response brief “is not in compliance with 28 U.S.C. § 1746, because it is not signed under penalty of perjury.” (Dkt. #36 at p. 2 n.1). Even if the affidavit were stricken, however, Plaintiff has not demonstrated that the exhibits attached to Defendants’ brief should necessarily be stricken, including, perhaps most notably, the separately signed declaration of Defendants’ expert. (*See* Dkt. #35, Exhibit C at p. 49). Also, Defendants have filed an amended declaration with no opposition by Plaintiff. (*See* Dkt. #42; *see also* Dkt. #41.) Thus, to whatever extent Plaintiff is maintaining proper objections to Defendants’ exhibits, any such objections are denied.

<p>“the ghost-mobile node triggering signals based on a predicted physical location of such mobile node or distance with relation to the at least one foreign agent”</p> <p>(’417 Patent, Claim 1)</p>	<p>Plain and ordinary meaning</p>
<p>“at least one advertisement message from a foreign agent in a vicinity of the ghost-mobile node”</p> <p>(’417 Patent, Claim 4)</p>	<p>Plain and ordinary meaning</p>
<p>“the at least one ghost-mobile node triggering registration based on a distance to a foreign agent by relaying security and shared secrets from a mobile node”</p> <p>(’417 Patent, Claim 4)</p>	<p>Plain and ordinary meaning</p>

(Dkt. #30 at p. 2).

Disputed Claim Terms

A. “ghost mobile node” (’508 Pat., Cls. 1, 2; ’417 Pat., Cls. 1, 4, 7)

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“virtual node that can act on behalf of the mobile node including software instructions running on a device”²</p>	<p>“a node operating on behalf of the mobile node that is capable of registering with a foreign agent and allocating resources for the mobile node before the mobile node arrives in the coverage area of the foreign agent”³</p>

(Dkt. #33 at p. 9; Dkt. #35 at p. 5; Dkt. #38, Exhibit A at p. 2).

² Plaintiff previously proposed: “a virtual node including software instructions running on a device that contains a transceiver for communicating with the mobile node.” (Dkt. #30 at p. 3).

³ Defendants previously proposed: “a *virtual* node operating on behalf of the mobile node that is capable of registering with a foreign agent and allocating resources for the mobile node before the mobile node arrives in the coverage area of the foreign agent.” (Dkt. #30 at p. 3 (emphasis added)).

1. The Parties' Positions

Plaintiff argues that whereas Plaintiff's proposal "reflects the clear teaching of the specification," "Defendants' proposed construction improperly imports limitations from the file history into the claims that would render other elements recited in the claims superfluous." (Dkt. #33 at p. 9).

Defendants respond that "Plaintiff's proposal describes a generic node that could apply to any and every node on a network" and "ignores what is described in the four corners of the patents-in-suit." (Dkt. #35 at p. 5). Defendants also argue that their proposal "comes directly from statements the applicants had to make during prosecution to gain allowance of the claimed subject matter." (Dkt. #35 at p. 5).

Plaintiff replies by reiterating that a ghost mobile node may be virtual, and "there is nothing to preclude a virtual co-location with the mobile node." (Dkt. #36 at p. 3). Plaintiff also argues that the prosecution history cited by Defendants contains no clear and unmistakable disavowal of claim scope. (Dkt. #35 at p. 4).

2. Analysis

Claim 1 of the '508 Patent, for example, recites (emphasis added):

1. A system for handling mobile devices in a wireless communications network, the system comprising:

 a mobile node communicatively linked to the wireless communications network, wherein the mobile node has a corresponding geographical current state and one or more predicted geographical future states;

 at least one foreign agent identified for each of the geographical future states;

 at least one *ghost mobile node* associated with the mobile node, wherein said *ghost mobile node* can announce to said foreign agent the presence of said *ghost mobile node*;

 a ghost-foreign agent associated with said foreign agent, wherein said ghost foreign agent can announce to said mobile node or said ghost mobile node associated with the mobile node, the presence of said ghost foreign agent;

means for registering said ghost mobile node or mobile node with the associated ghost foreign agent or foreign agent, while the mobile node remains in the geographical current state; and

means for linking the mobile node with a foreign agent associated with said ghost foreign agent when the mobile node enters a respective geographical future state associated with said foreign agent.

Plaintiff has pointed out that the claim separately recites a “means for registering said ghost mobile node,” but Defendants’ proposal does not require that the ghost mobile node must register itself. Instead, Defendants’ proposal merely requires that the ghost mobile node must be *capable* of registering before the mobile node arrives in the coverage area of the foreign agent.

The issue, then, is whether the intrinsic record contains any definition or disclaimer that warrants Defendants’ proposed capability, in particular as to “before the mobile node arrives in the coverage area of the foreign agent.” As a general matter, the specification can be considered “to understand what the patentee has claimed and disclaimed.” *SafeTCare Mfg., Inc. v. Tele-Made, Inc.*, 497 F.3d 1262, 1270 (Fed. Cir. 2007) (“The inventor makes clear that this attribute of the invention is important in distinguishing the invention over the prior art.”); *see, e.g., Regents of the Univ. of Minn. v. AGA Med. Corp.*, 717 F.3d 929, 936 (Fed. Cir. 2013) (“When a patent . . . describes the features of the ‘present invention’ as a whole, this description limits the scope of the invention.”) (quoting *Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1308 (Fed. Cir. 2007)).

The Summary of the Invention states that:

The present invention provides a preemptive and predictive solution for communications in wireless communications networks. More particularly, the present invention provides two different types of ghost-entities that can be used individually or jointly in setting up a wireless connection between a mobile node and a foreign agent. *The ghost entities can act on behalf of a wireless node and a foreign agent.* They can determine and use predicted information to improve the performance of wireless communications, especially those involving a mobile node moving at moderate or high speeds. As explained herein, the ghost entities cause

communication network resources to be allocated proactively rather than reactively.

* * *

The ghost-mobile node can be configured to register the mobile node and allocate resources for communicating with the mobile node according to a predicted future state of the mobile node.

'508 Patent at 2:47–48 & 2:57–61 (emphasis added). The specification further discloses:

[T]he ghost-mobile node and the ghost-foreign agent, operating either individually or jointly, can cause network communication resources to be allocated preemptively rather than passively as in conventional communications networks in which handoffs typically only follow an exchange of setup information following a mobile node's arrival in the physical region covered by the foreign agent.

Id. at 4:8–14; *see id.* at 6:19–26 (“the ghost-mobile node can be a virtual node and need not reside at the same physical location as the mobile node 250”; “The ghost-mobile node 220, for example, can be set [*sic*] of software instructions running on a device that is remote from the mobile node 250 and that contains a transceiver for communicating with the mobile node.”); *see also id.* at 3:60–66.

The signal from the ghost-mobile node 220 results in a preemptive setup, one that is effected *before the mobile node 250 arrives in the predefined area of coverage of the next foreign agent*. The setup can entail all the aspects that occur in the beginning phase of a standard network connection negotiation including the negotiation of protocol details, communication rates, and error-handling approaches. These are needed to allow the connection to proceed correctly and reliably, but absent the participation of the ghost-mobile node 220 would have to await the arrival of the mobile node 250 in the predefined region covered by the foreign agent 215, 230.

Accordingly, the ghost-mobile node 220 can increase the speed with which handoff occurs, thereby reducing setup delay and avoiding information losses [*sic*] due to the dropping of datagram packets. The ghost-mobile node 220 can replicate the registration request, handle the creation of tunnels, and replicate authentication and authorization information from the mobile node 250, thus acting on behalf of the mobile node 250 *before the mobile node is in range of a next foreign agent 215, 230*. . . . When the mobile node 250 leaves one foreign agent 215 and moves into the vicinity of the next foreign agent 230, registration will have already taken place

and resources will already have been allocated for connecting the mobile node to the communication network.

Id. at 9:57–10:16 (emphasis added).

Although disclosures in the specification are thus consistent with Defendants’ proposed construction, Defendants have not shown how any disclosure in the specification rises to the level of a definition or disclaimer. *See Phillips*, 415 F.3d at 1323 (“although the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments”). The Court therefore turns to the prosecution history that has been discussed by the parties.

During prosecution of the ’508 Patent, the patentee argued as follows regarding United States Patent Application Publication No. 2003/0016655 (“Gwon”):

Applicants emphasize the distinction between the ghost mobile nodes and mobile nodes of the present invention. The Examiner rejected the ghost mobile node, regardless of its physical embodiment, since it is “a virtual node or a set of software instructions running on the mobile node itself.” The fact that the ghost mobile node could be a virtual node is not relevant to the operative role of the ghost mobile node as opposed to the mobile node. An estimated location of the mobile node based on GPS data can be utilized along with trajectory and speed information of the mobile node *to predict the future geographical state*. Based on a predicted future state, one or more ghost mobile nodes can be created that are capable of representing the mobile node, and fulfilling actions traditionally requiring the physical presence of the mobile node, namely registering and allocating communication resources. The ghost mobile node is capable of registering and allocating communication resources *before* the mobile node physically arrives in a geographical state.

(Dkt. #35, Exhibit E, Apr. 6, 2009 Response to Office Action at p. 12 (emphasis in original)); *see id.* at p. 11 (noting that, in Gwon, “[t]he new local router can respond ‘directly to the mobile node’ with a router advertisement message”).

Plaintiff has submitted that “[i]t is not necessary that each claim read on every embodiment.” *PPC Broadband, Inc. v. Corning Optical Commc’ns RF, LLC*, 815 F.3d 747, 755 (Fed. Cir. 2016) (quoting *Baran v. Med. Device Techs., Inc.*, 616 F.3d 1309, 1316 (Fed. Cir.

2010)). Plaintiff has argued, in its reply brief, that there was no clear and unmistakable disavowal of claim scope:

At a minimum, Applicant's statement that "[t]he ghost mobile node is capable of registering and allocating communication resources" is ambiguous in its relation to other claims in the patent, because (1) those functions are attributed to other elements in the claim and dependent claims; (2) multiple embodiments are disclosed in the specification, supported by expert testimony; and (3) then-pending Claim 17 is copied in its entirety in the OAR [(office action response)] to frame the scope of the discussion.

(Dkt. #36 at p. 4; *see id.* at p. 6 ("the file history only states what one or more embodiments of a ghost mobile node 'are capable of,' not required"). At the July 10, 2018 hearing, Plaintiff cited authority that "where the alleged disavowal is ambiguous, or even amenable to multiple reasonable interpretations," there is no disclaimer. *Avid Tech., Inc. v. Harmonic, Inc.*, 812 F.3d 1040, 1045 (Fed. Cir. 2016) (citation and internal quotation marks omitted).

But whereas Plaintiff has argued that these statements were not made with reference to the claimed invention as a whole, this prosecution history refers to "[t]he present invention, as amended in the independent claims." (Dkt. #35, Exhibit E, Apr. 6, 2009 Response to Office Action at p. 11). Further, whereas Plaintiff has stressed that parts of the prosecution statements cited by Defendants refer to language from a different claim, these statements conclude by explicitly referring to Claim 1 and the other claims:

Applicants therefore respectfully submit that amended Claim 1 defines over the prior art. Furthermore, as each of the remaining claims depends from Claim 1 while reciting additional features, Applicants further respectfully submit that the remaining claims likewise define over the prior art.

(Dkt. #35 at p. 12).

Plaintiff has failed to persuasively show how this prosecution history could be read as confining the patentee's statements to only one particular claim.

Thus, on balance, the patentee definitively stated that “[t]he ghost mobile node is capable of registering and allocating communication resources before the mobile node physically arrives in a geographical state.” (*Id.* (emphasis omitted); *see, e.g., Omega Eng’g*, 334 F.3d at 1324 (“As a basic principle of claim interpretation, prosecution disclaimer promotes the public notice function of the intrinsic evidence and protects the public’s reliance on definitive statements made during prosecution.”); *Typhoon Touch Techs., Inc. v. Dell, Inc.*, 659 F.3d 1376, 1381 (Fed. Cir. 2011) (“The patentee is bound by representations made and actions that were taken in order to obtain the patent.”)). This understanding is consistent with the above-reproduced disclosures, particularly in the Summary of the Invention.

This prosecution disclaimer applies not only to the ’508 Patent but also to the continuation ’417 Patent. *See, e.g., Omega Eng’g*, 334 F.3d at 1333 (“As long as the same claim limitation is at issue, prosecution disclaimer made on the same limitation in an ancestor application will attach.”); *SightSound Techs., LLC v. Apple Inc.*, 809 F.3d 1307, 1316 (Fed. Cir. 2015) (“Where multiple patents derive from the same parent application and share many common terms, we must interpret the claims consistently across all asserted patents.”) (citation and internal quotation marks omitted).

Nonetheless, Plaintiff has demonstrated that a ghost mobile node can be a “virtual” node. (*See* Dkt. #35, Exhibit E, April 6, 2009 Response to Office Action at p. 12 (“the ghost mobile node could be a virtual node”)); *see also* ’508 Patent at 6:19–26 (“the ghost-mobile node can be a *virtual node* and need not reside at the same physical location as the mobile node 250”) (emphasis added) & 11:19–23 (“a basis of the proactive allocation of communication resources for a stationary or moving mobile node is the *virtual* instantiation of the ghost-mobile node in at least one additional wireless network node proximate to the predicted future location of the mobile node”) (emphasis

added). At the July 10, 2018 hearing, Defendants were amenable to construing this disputed term to be a node or a virtual node.

Plaintiff has also argued that Defendants’ proposed construction is incorrect because a ghost mobile node cannot allocate resources by itself. *See, e.g.*, ’508 Patent at Cl. 3 (“wireless communications network can allocate communications network resources”). Defendants have responded, however, that their proposed construction “does not impose that the ghost mobile node by itself performs the registration and allocation of resource functions.” (Dkt. #35 at p. 10).

Finally, as to Defendants’ proposal of “coverage area,” Plaintiff’s expert has opined that the phrase “coverage area” could create confusion because there may be “areas within the coverage area that really aren’t covered.” (Dkt. #33, Exhibit 3C, May 18, 2018 Blackburn dep. at 95:22–98:21). The specification refers to a region “covered by” the particular foreign agent. ’508 Patent at 9:19–20. At the July 10, 2018 hearing, Defendants submitted that “coverage area” and “region covered by” are synonymous for purposes of the patents-in-suit.

The Court therefore hereby construes **“ghost mobile node”** to mean **“a node, or a virtual node, that can operate on behalf of the mobile node and that is capable of registering with a foreign agent and allocating resources for the mobile node before the mobile node arrives in the physical area covered by the foreign agent.”**

B. “foreign agent” (’508 Pat., Cls. 1, 5; ’417 Pat., Cls. 1, 4, 7)

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“a general purpose computer including specialized routing software for relaying communication transmissions”	“a network node on a visited network that assists the mobile node in receiving communications delivered to a care-of address”

(Dkt. #30 at p. 3; Dkt. #33 at p. 14; Dkt. #35 at p. 12; Dkt. #38, Exhibit A at p. 2).

1. The Parties' Positions

Plaintiff argues that its proposal “is taken directly from the specification of the Patents-in-Suit.” (Dkt. #33 at p. 15 (citing ’508 Patent at 4:45–49)). Plaintiff argues that Defendants’ proposal, by contrast, “improperly imports limitations from the specification into the claims.” (Dkt. #33 at p. 15).

Defendants respond that “Defendants’ construction is consistent with what the term means to a person of ordinary skill in the art, whereas Plaintiff’s definition encompasses any general computing device that performs a routing function.” (Dkt. #35 at p. 12).

Plaintiff’s reply brief does not address this term. (*See* Dkt. #36).

2. Analysis

The Background section of the specification states:

Mobile IP allows a mobile node to use two IP addresses, one being a fixed home address and the other being a care-of address. The care-of address changes as the mobile node moves between networks thereby changing its point of attachment to a network.

’508 Patent at 1:44–48. Yet, no “care-of address” limitation appears in the claims here at issue. *See id.* at Cls. 1, 5; *see also* ’417 Patent at Cls. 1, 4 & 7. Also, as Plaintiff has pointed out, Claims 6 and 8 of the ’417 Patent explicitly recite a “care-of-address” (emphasis added):

6. The system of claim 1, wherein the at least one ghost-foreign agent populates mobile IP Advertisement messages with at least one *care-of-address* of neighboring foreign agents in order to extend the range of neighboring foreign agents.

* * *

8. A method, comprising the steps of:

creating, in a network, a plurality of ghost foreign agents corresponding to a foreign agent, the ghost foreign agents configured to replicate mobile advertisements of the foreign agent, the mobile advertisements including at least one of: an IP address of the foreign agent, a *care-of-address* of the foreign agent, and at least one mobile IP registration, the ghost foreign agents created at a distance surrounding the foreign agent;

detecting, in a mobile node, the foreign agent in the network;
receiving, in the mobile node, an advertisement message corresponding to the foreign agent from one of the ghost foreign agents;
registering, in the mobile node, with the foreign agent through the ghost foreign agent; and
broadcasting advertisement messages from the plurality of ghost foreign agents to the mobile node to extend a reach of the foreign agent, wherein a distance from the mobile node to one of the ghost foreign agents is less than the distance from the mobile node to the foreign agent.

Defendants have argued that the specification demonstrates that the patentee used the term “foreign agent” according to its meaning in the relevant art in the Mobile IPv4 protocol. The Background section of the specification states:

What is generally needed for such architectures to function adequately is some way for the mobile node to let other nodes know where the mobile node can be reached while the host is moving or located away from home. In accordance with a typical mobile networking protocol, a mobile node registers with a home agent so that the home agent can remain a contact point for other nodes that wish to exchange messages or otherwise communicate with the mobile node as it moves from one location to another. An example of such a protocol is Mobile Internet Protocol (Mobile IP). Mobile IP allows a mobile node to use two IP addresses, one being a fixed home address and the other being a care-of address. The care-of address changes as the mobile node moves between networks thereby changing its point of attachment to a network. When the mobile node links to a network other than one in which the home agent resides, the mobile node is said to have linked to a foreign network. The home network provides the mobile node with an IP address and once the node moves to a foreign network and establishes a point of attachment, the mobile node receives a care-of address assigned by the foreign network.

Mobile IP v. 4 depends on the interaction between a home agent and foreign agents, the foreign agents serving as wireless access points distributed throughout a coverage area of a network or an interconnection of multiple networks.

’508 Patent at 1:35–59; *see id.* at 5:28–38 (“the foreign agents 210, 215, 230 assist the mobile node 250 in receiving datagrams delivered to the care-of address”).

No definition or disclaimer is apparent that would require a foreign agent to necessarily use a “care-of address.” Instead, this is a specific feature of particular embodiments that should not be imported into the claims. *See Phillips*, 415 F.3d at 1323.

Nonetheless, Defendants properly criticize Plaintiff’s proposed construction as encompassing home agents as well as foreign agents. Plaintiff’s expert has acknowledged that Plaintiff’s proposed construction might encompass any type of router. (*See* Dkt. #35, Exhibit J, May 18, 2018 Blackburn dep. at 52:16–53:10). The patents-in-suit, by contrast, distinguish between home agents and foreign agents. *See, e.g.*, ’508 Patent at Cls. 6 & 8 (reciting a “home agent”); ’417 Patent at Cl. 1 (reciting “at least one home agent” and “at least one foreign agent”); *Becton, Dickinson & Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010) (“[w]here a claim lists elements separately, the clear implication of the claim language is that those elements are distinct component[s] of the patented invention”) (citations and internal quotation marks omitted). The above-reproduced disclosure, for example, likewise reinforces that there is a distinction between home agents and foreign agents. *See* ’508 Patent at 1:35–59. Additional disclosure cited by Plaintiff, as to foreign agents being implemented by software or by special-purpose hardware, does not compel otherwise. *See id.* at 4:45–49.

The Court therefore hereby construes “**foreign agent**” to mean “**a network node on a visited network that assists the mobile node in receiving communications.**”

C. “ghost-foreign agent” (’508 Pat., Cls. 1, 5; ’417 Pat., Cl. 1)

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“a virtual computer including specialized routing software for relaying communication transmissions, acting on behalf of a foreign agent”	“a virtual node corresponding to a foreign agent that can make a mobile node aware of the corresponding foreign agent’s presence in a communication network before the mobile node actually arrives in the physical region covered by the foreign agent”

(Dkt. #30 at p. 3; Dkt. #33 at p. 15; Dkt. #35 at p. 15; Dkt. #38, Exhibit A at p. 2).

1. The Parties' Positions

Plaintiff argues that its proposal “is taken directly from the specification, relying on the specification’s discussion of a foreign agent combined with the disclosure from the specification for ghost entities.” (Dkt. #33 at p. 16 (citing ’508 Patent at 2:42–54 & 4:45–49)).

Defendants respond that “Plaintiff’s construction fails to acknowledge that the purpose of the ghost foreign agent in the alleged invention is to make a mobile node aware of a corresponding foreign agent’s presence in a communication network before the mobile node actually arrives in the physical region covered by the foreign agent.” (Dkt. #35 at pp. 15–16). Further, Defendants argue: “Plaintiff’s construction also injects unnecessary ambiguity, since it is unclear what constitutes ‘acting on behalf of a foreign agent.’ Arguably, any intermediate network node acts on behalf of a foreign agent by, for example, relaying messages to and from the foreign agent.” (Dkt. #35 at pp. 15–16).

Plaintiff’s reply brief does not address this term. (*See* Dkt. #36).

2. Analysis

The specification discloses:

[E]ach of the network nodes defining the foreign agents 210, 215, 230 can be general purpose computers on which is running specialized routing software, or alternately, application-specific devices such as routers for relaying communication transmissions.

Id. at 4:45–49. This disclosure, cited by Plaintiff, does not refer to “ghost” foreign agents, and Plaintiff’s reliance on this disclosure is unpersuasive. Nonetheless, the parties agree that a “ghost-foreign agent” can be “virtual.” *See also id.* at 11:9–31.

The Summary of the Invention states:

[T]he present invention provides two different types of ghost-entities that can be used individually or jointly in setting up a wireless connection between a mobile

node and a foreign agent. The ghost entities can act on behalf of a wireless node and a foreign agent.

* * *

Another aspect of the present invention includes a network node pair that includes a foreign agent and a ghost-foreign agent. The ghost-foreign agent *can be configured* to provide an advance notification to the mobile node of a *presence of a next wireless network node proximate to the predicted future location of the mobile node*. In particular, a ghost-foreign agent corresponding to a second foreign agent *can make the mobile node aware of the presence of the second foreign agent* by signaling an advertisement to the mobile node from a first foreign agent.

'508 Patent at 2:44–48 & 3:1–10 (emphasis added).

At first blush, this disclosure of how a ghost-foreign agent “can be configured” might be read as referring to merely one possible implementation. In context, however, this statement regarding the “present invention,” which appears in the Summary of the Invention, amounts to a disclosure of what the ghost-foreign agent necessarily can do. In other words, in light of this context, the patentee set forth this functionality as a required capability. *See, e.g., VirnetX, Inc. v. Cisco Sys., Inc.*, 767 F.3d 1308, 1318 (Fed. Cir. 2014); *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 864 (Fed. Cir. 2004) (“Statements that describe the invention as a whole, rather than statements that describe only preferred embodiments, are more likely to support a limiting definition of a claim term. . . . Statements that describe the invention as a whole are more likely to be found in certain sections of the specification, such as the Summary of the Invention.”).

Additional disclosure in the specification is consistent with this understanding:

Referring still to FIGS. 2A and 2B, each of the network node pairs 204a, 204b further includes ghost-foreign agents 225, 240 in addition to network nodes defining foreign agents 215, 230. A ghost-foreign agent 225, 240 transmits an advertisement notifying the mobile node 250 of the existence of a next foreign agent 230, transmitting the advertisement from a foreign agent 215 currently connected with the mobile node 250. That is, the ghost-foreign agent 225 advertises a first foreign agent 230 but does so using a second foreign agent 215. Thus, the advertisement of foreign agent 230 by its ghost-foreign agent 225 is able to reach the mobile node 250 while the mobile node is in the predefined region covered by

foreign agent 215. Therefore, the ghost-foreign agent 225 makes the mobile node aware of the foreign agent 230 before it arrives in the predefined region covered by the foreign agent.

'508 Patent at 10:17–32; *see id.* at 3:66–4:18; *see also id.* at 11:1–31.

Finally, as to Defendants' proposal of "before the mobile node actually arrives in the physical region covered by the foreign agent," Defendants have not presented any prosecution history disclaimer argument for this term or any other persuasive justification for this limitation. The construction of "ghost-foreign agent" therefore differs from the construction of "ghost mobile node" in this regard. The proper construction is apparent from the above-discussed statements in the Summary of the Invention.

The Court therefore hereby construes "**ghost-foreign agent**" to mean "**a virtual node corresponding to a foreign agent that can make a mobile node aware of the corresponding foreign agent's presence in a communication network proximate to the predicted future location of the mobile node.**"

D. "geographical current state" ('508 Pat., Cl. 1)

Plaintiff's Proposed Construction	Defendants' Proposed Construction
"region served by a base station, in which the mobile node is linked to the wireless network" ⁴	"coverage area of an agent through which the mobile node linked to the network at its current location" ⁵

(Dkt. #33 at p. 16; Dkt. #35 at p. 16).

Plaintiff submitted that its proposal "uses the term 'region' to avoid ambiguous situations, e.g., where 'coverage areas' overlap." (Dkt. #33 at p. 16). Plaintiff also argued that "Defendants'

⁴ Plaintiff previously proposed: "region in which it is optimal, based upon predetermined thresholds, to communicate with a particular base station." (Dkt. #30 at p. 3).

⁵ Defendants previously proposed: "coverage area of an agent through which the mobile is linked to the network at its current location." (Dkt. #30 at p. 3).

proposed construction uses marketing jargon commonly used in advertisements that could confuse the jury.” (Dkt. #33 at p. 17).

Defendants responded that “[u]nder Plaintiff’s revised construction, there does appear to be a meaningful dispute as Defendants contend that the terms ‘regions served by’ and ‘coverage area of’ (and similar coverage or covered-related terms) mean the same thing and refer to an area where a mobile node can detect advertisement messages (or beacon signals) from the foreign agent.” (Dkt. #35 at p. 17). Read in context, Defendants’ statement that “there *does* appear to be a meaningful dispute” seems to have been intended to state that there does *not* appear to be a meaningful dispute. (Dkt. #35 at p. 17).

Plaintiff has replied:

Upon further consideration of Defendants’ proposed construction, and in an effort to reduce the issues before the Court, Mobility is willing to agree to Defendants’ proposed construction of this term, without agreeing with Defendants’ argument/evidence in support thereof. Mobility expressly reserves the right to provide argument/evidence supporting this proposed construction, as necessary. Accordingly, Mobility withdraws its construction and accepts Defendants’ construction for this term.

(Dkt. #36 at p. 6). In the parties’ July 2, 2018 Joint Claim Construction Chart, the parties confirmed their agreement in this regard. (Dkt. #38, Exhibit A at p. 1).

In light of this agreement between the parties as to how this term should be construed, the Court hereby construes “**geographical current state**” to mean “**coverage area of an agent through which the mobile node is linked to the network at its current location.**”

E. “[predicted] geographical future state(s)” (’508 Pat., Cl. 1)

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“coverage area(s) in which it will be optimal, based upon predetermined thresholds, to communicate with a particular agent” ⁶	“coverage area of a foreign agent in which the mobile node is predicted to be located at a time(s) in the future”

(Dkt. #30 at p. 3; Dkt. #33 at p. 17; Dkt. #35 at p. 18; Dkt. #38, Exhibit A at p. 1).

1. The Parties’ Positions

Plaintiff argues that whereas its proposal “reflects the clear teaching of the specification,” Defendants’ proposal “fails to account for the manner in which the future geographical states are predicted, instead choosing to simply restate the ‘prediction’ limitation.” (Dkt. #33 at p. 18).

Defendants respond that their proposal “is simply an extension of their proposal for ‘geographical current state’ with respect to a coverage area of (or region served by) a foreign agent and accounts for the manner in which future states are predicted.” (Dkt. #35 at p. 18). Defendants also argue that “Plaintiff’s construction is not tied to the specification, adds uncertainty to the scope of the claim, and fails to account for the prediction of a future location.” (Dkt. #35 at p. 18).

Plaintiff replies that Defendants admit that parameters such as trajectory, speed, location, and signal strength may be used, and “Defendants admit that the concept of optimality is firmly embedded within the specification.” (Dkt. #36 at p. 7). Plaintiff also argues that “multiple coverage areas must be contemplated, because, as the mobile node travels, these parameters change,” and “signals from multiple foreign agents in multiple coverage areas may be received and optimality determined.” (Dkt. #36 at p. 7).

⁶ Plaintiff previously proposed: “[predicted] region(s) in which it will be optimal, based upon predetermined thresholds, to communicate with a particular base station.” (Dkt. #30 at p. 3; Dkt. #33 at p. 17).

2. Analysis

Claim 1 of the '508 Patent recites (emphasis added):

1. A system for handling mobile devices in a wireless communications network, the system comprising:

a mobile node communicatively linked to the wireless communications network, wherein the mobile node has a corresponding geographical current state and one or more *predicted geographical future states*;

at least one foreign agent identified for each of the *geographical future states*;

at least one ghost mobile node associated with the mobile node, wherein said ghost mobile node can announce to said foreign agent the presence of said ghost mobile node;

a ghost-foreign agent associated with said foreign agent, wherein said ghost foreign agent can announce to said mobile node or said ghost mobile node associated with the mobile node, the presence of said ghost foreign agent;

means for registering said ghost mobile node or mobile node with the associated ghost foreign agent or foreign agent, while the mobile node remains in the geographical current state; and

means for linking the mobile node with a foreign agent associated with said ghost foreign agent when the mobile node enters a respective *geographical future state* associated with said foreign agent.

As to whether the construction should include “predicted,” the recital of “one or more predicted geographical future states” provides antecedent basis for “the geographical future states” and “respective geographical future state.” The word “predicted” therefore applies to all of these uses of the disputed term (even where the word “predicted” is not expressly recited). As to whether the word “predicted” should itself be used in the construction, Plaintiff has not demonstrated that the patentee gave any special meaning to this word. *See* '508 Patent at 7:11–12 (“Any of a variety of different location prediction techniques can be used by the ghost-mobile node 220.”). The Court’s construction can therefore include this word. *See U.S. Surgical*, 103 F.3d at 1568 (“Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy.”); *see also O2 Micro*, 521 F.3d at

1362 (“[D]istrict courts are not (and should not be) required to construe every limitation present in a patent’s asserted claims.”).

The specification demonstrates that this disputed term refers to a location within a wireless communications network:

The future state can be a physical state such as the location of the mobile node 250, and the prediction can be the time that the mobile node will be in the predefined region served by the foreign agent 215. Accordingly, the predicted future state of the mobile node 250 can be based, for example, upon the trajectory of the mobile node or upon its speed. Alternately, the predicted future state of the mobile node 250 can be based upon an estimated location of the mobile node.

* * *

Based upon the predicted future state of the mobile node 250, the ghost-mobile node 220 can determine which foreign agent 210, 215, 230 is likely to serve as the mobile node’s next communicative link.

’508 Patent at 6:39–47 & 8:61–64; *see id.* at 2:64–65 (“the ghost-mobile node can be configured to predict the future location of the mobile node”); *see also id.* at 1:44–48 (“point of attachment to a network”). Similarly, the patentee stated during prosecution:

An estimated location of the mobile node based on GPS data can be utilized along with trajectory and speed information of the mobile node *to predict the future geographical state*. . . . The ghost mobile node is capable of registering and allocating communication resources *before* the mobile node physically arrives in a geographical state.

(Dkt. #35, Exhibit E, Apr. 6, 2009 Response to Office Action at p. 12 (emphasis in original)).

Plaintiff’s argument that “multiple coverage areas must be contemplated” (Dkt. #36 at p. 7) is at odds with this above-discussed evidence, which refers to a particular location or a particular foreign agent, and is also at odds with the disputed term itself, at least in the instance in which the term refers to a “state,” singular, rather than plural states.

Finally, Plaintiff has failed to provide adequate support for its proposal of “optimal.” *See* ’508 Patent at 8:45–54 (disclosure regarding “find[ing] a closest foreign agent”). Likewise,

Plaintiff has failed to provide adequate support for its proposal of using “thresholds,” which at best merely relates to specific features of particular embodiments that should not be imported into the claims. *See id.* at 8:44–54; *see also Phillips*, 415 F.3d at 1323.

The Court therefore hereby construes “[**predicted**] **geographical future state**” to mean **“coverage area, within a wireless communications network, in which the mobile node is predicted to be able to be linked to the wireless communications network at a time in the future.”**

F. “at least one foreign agent identified for each of the geographical future states” (’508 Pat., Cl. 1)

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Plain and ordinary meaning (subject to disputed constructions of “foreign agent” and “geographical future states”) ⁷	“at least one foreign agent whose coverage area is determined to include the mobile node’s predicted future location(s)”

(Dkt. #30 at p. 3; Dkt. #33 at p. 20; Dkt. #35 at pp. 20–21; Dkt. #38, Exhibit A at p. 1).

1. The Parties’ Positions

Plaintiff argues that whereas its proposal “reflects the clear teaching of the specification,” Defendants’ proposal “improperly includes an additional ‘determined to include’ step.” (Dkt. #33 at p. 20).

Defendants respond that “‘identified for’ is a dynamic verb phrase that describes an active step of identification.” (Dkt. #35 at p. 21). Defendants also cite the specification as well as inventor testimony. (Dkt. #35 at p. 21).

Plaintiff’s reply brief does not address this term. (*See* Dkt. #36).

⁷ Plaintiff previously proposed: “general purpose computer including specialized routing software for relaying communication transmissions identified for each of the [predicted] region(s) in which it will be optimal, based upon predetermined thresholds, to communicate with a particular base station.” (Dkt. #30 at p. 3).

2. Analysis

As a threshold matter, Defendants have cited inventor testimony,⁸ but such testimony is of little, if any, relevance in these claim construction proceedings. *See Howmedica Osteonics Corp. v. Wright Med. Tech., Inc.*, 540 F.3d 1337, 1346–47 (Fed. Cir. 2008) (noting that inventor testimony is “limited by the fact that an inventor understands the invention but may not understand the claims, which are typically drafted by the attorney prosecuting the patent application”).

Claim 1 of the ’508 Patent recites (emphasis added):

1. A system for handling mobile devices in a wireless communications network, the system comprising:
 - a mobile node communicatively linked to the wireless communications network, wherein the mobile node has a corresponding geographical current state and one or more predicted geographical future states;
 - at least one foreign agent identified for each of the geographical future states;*
 - at least one ghost mobile node associated with the mobile node, wherein said ghost mobile node can announce to said foreign agent the presence of said ghost mobile node;
 - a ghost-foreign agent associated with said foreign agent, wherein said ghost foreign agent can announce to said mobile node or said ghost mobile node associated with the mobile node, the presence of said ghost foreign agent;
 - means for registering said ghost mobile node or mobile node with the associated ghost foreign agent or foreign agent, while the mobile node remains in the geographical current state; and
 - means for linking the mobile node with a foreign agent associated with said ghost foreign agent when the mobile node enters a respective geographical future state associated with said foreign agent.

Defendants have argued that “‘identified for’ is a dynamic verb phrase that describes an active step of identification” (Dkt. #35 at p. 21), and Defendants have cited the following disclosure in the specification:

Based upon the predicted future state of the mobile node 250, the ghost-mobile node 220 can *determine* which foreign agent 210, 215, 230 is likely to serve as the mobile node’s next communicative link.

⁸ (See Dkt. #35, Exhibit N, May 9, 2018 Helal dep. at 167:9–168:7).

'508 Patent at 8:61–64 (emphasis added); *see id.* at 8:44–54; *see also id.* at 8:64–9:5 (“the ghost-mobile node 220 can calculate a distance to the closest foreign agent in the path of the mobile node 250 based upon an estimated speed or trajectory of the mobile node 250”). Defendants have cited a decision that found “the phrase ‘are transmitted’ . . . can be fairly read as a dynamic verb phrase that describes the act of transmission, not a stative phrase that is used adjectivally to describe the data blocks as having been transmitted.” *TQP Development, LLC v. Intuit Inc.*, No. 2:12-CV-180, 2014 WL 2810016, at *2 (E.D. Tex. Jun. 20, 2014) (Bryson, J., sitting by designation).

On balance, Defendants have not demonstrated that above-reproduced Claim 1 of the '508 Patent, which is a system claim rather than a method claim, requires an active step of determining. Instead, the disputed term is sufficiently clear on its face that the system is configured such that at least one foreign agent is (or has been) identified for each of the geographical future states.

The Court therefore hereby expressly rejects Defendants' proposed construction. No further construction is necessary in light of the context provided by express recitals in the claims. *See U.S. Surgical*, 103 F.3d at 1568 (“Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy.”); *see also O2 Micro*, 521 F.3d at 1362 (“[D]istrict courts are not (and should not be) required to construe every limitation present in a patent's asserted claims.”); *Summit 6, LLC v. Samsung Elecs. Co., Ltd.*, 802 F.3d 1283, 1291 (Fed. Cir. 2015).

The Court accordingly hereby construes “**at least one foreign agent identified for each of the geographical future states**” to have its **plain meaning**.

G. “while the mobile node remains in the geographical current state” (’508 Pat., Cl. 1)

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Plain and ordinary meaning (subject to the undisputed construction of “mobile node” and the disputed construction of “geographical current state”) ⁹	“before the mobile node physically arrives in the geographical future state”

(Dkt. #30 at p. 4; Dkt. #33 at p. 20; Dkt. #35 at p. 21; Dkt. #38, Exhibit A at p. 3.).

1. The Parties’ Positions

Plaintiff argues that whereas its proposal “reflects the clear teaching of the specification,” Defendants’ proposal “improperly includes an additional ‘physical arrival’ limitation.” (Dkt. #33 at p. 21).

Defendants respond that “[f]or reasons similar to those discussed above concerning the term ‘ghost mobile node,’ based on the specification and statements during the prosecution, the ‘means for registering’ (discussed below) must allow a ghost mobile node to register the mobile node to the next foreign agent before the mobile node physically arrives in the geographical future state.” (Dkt. #35 at p. 21).

Plaintiff’s reply brief does not address this term. (*See* Dkt. #36).

2. Analysis

Claim 1 of the ’508 Patent recites (emphasis added):

1. A system for handling mobile devices in a wireless communications network, the system comprising:
 - a mobile node communicatively linked to the wireless communications network, wherein the mobile node has a corresponding geographical current state and one or more predicted geographical future states;
 - at least one foreign agent identified for each of the geographical future states;

⁹ Plaintiff previously proposed: “while the mobile node remains in the region in which it is optimal, based upon predetermined thresholds, to communicate with a particular base station.” (Dkt. #30 at p. 4).

at least one ghost mobile node associated with the mobile node, wherein said ghost mobile node can announce to said foreign agent the presence of said ghost mobile node;

a ghost-foreign agent associated with said foreign agent, wherein said ghost foreign agent can announce to said mobile node or said ghost mobile node associated with the mobile node, the presence of said ghost foreign agent;

means for registering said ghost mobile node or mobile node with the associated ghost foreign agent or foreign agent, *while the mobile node remains in the geographical current state*; and

means for linking the mobile node with a foreign agent associated with said ghost foreign agent when the mobile node enters a respective geographical future state associated with said foreign agent.

Defendants have not adequately supported their proposal of “physically arrives in the geographical future state” as to the present disputed term. That is, Defendants have not presented any prosecution history disclaimer argument for this term or any other persuasive justification for this limitation.

The Court therefore hereby expressly rejects Defendants’ proposed construction. No further construction is necessary. *See U.S. Surgical*, 103 F.3d at 1568; *see also O2 Micro*, 521 F.3d at 1362; *Summit 6*, 802 F.3d at 1291.

The Court therefore hereby construes “**while the mobile node remains in the geographical current state**” to have its **plain meaning**.

H. “when the mobile node is located in a geographical area where the foreign agent is not physically present” (’417 Pat., Cl. 1)

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Plain and ordinary meaning (subject to agreed construction of “mobile node” and disputed construction of “foreign agent”)	“when the mobile node is located outside of the coverage area of the foreign agent” ¹⁰

¹⁰ Defendants previously proposed: “when the mobile node is located outside the coverage area of the foreign agent.” (Dkt. #30 at p. 4).

(Dkt. #30 at p. 4; Dkt. #33 at p. 21; Dkt. #35 at p. 22; Dkt. #38, Exhibit A at p. 5).

1. The Parties' Positions

Plaintiff argues that “Defendants’ proposed term ‘coverage area’ has a particular meaning in marketing and is technically imprecise from the perspective of one of ordinary skill in the art.” (Dkt. #33 at p. 21).

Defendants respond that “[a]s discussed above with regard to the term ‘geographical current state,’ being outside the geographical area of the foreign agent means the mobile node cannot detect an advertisement signal (or beacon signal) from the foreign agent and therefore cannot initiate direct communications with the foreign agent.” (Dkt. #35 at p. 22).

Plaintiff’s reply brief does not address this term. (*See* Dkt. #36).

2. Analysis

Claim 1 of the ’417 Patent recites (emphasis added):

1. A system for communicating between a mobile node and a communication network; the network having at least one communications network node that is interconnected using a proxy mobile internet protocol (IP), comprising:
 - at least one mobile node;
 - at least one home agent;
 - at least one foreign agent;
 - a ghost-foreign agent that advertises messages to one of the mobile nodes indicating presence of the ghost-foreign agent on behalf of one of the foreign agents *when the mobile node is located in a geographical area where the foreign agent is not physically present*; and
 - a ghost-mobile node that creates replica IP messages on behalf of a mobile node, the ghost-mobile node handling signaling required to allocate resources and initiate mobility on behalf of the mobile node, the ghost-mobile node triggering signals based on a predicted physical location of such mobile node or distance with relation to the at least one foreign agent.

Defendants have cited the following testimony by Plaintiff’s expert:

Q. So there is a term, I think it’s in the ’417 patent, when the mobile node is located in a geographical area where the foreign agent is not physically present. What’s the plain and ordinary meaning of that term?

A. I think the plain and ordinary meaning to that is that there's this area, geographical area where the mobile node is located and the -- the foreign agent is not physically present, so it's not that the -- there isn't a beacon signal or something that's being -- being detected, but the -- basically it's just that the foreign agent is not present in that area, the geographical area.

(Dkt. #35, Exhibit J, May 18, 2018 Blackburn dep. at 210:9–211:5). Defendants have not shown that this testimony that “there isn't a beacon signal or something” gives rise to a disclaimer or an estoppel. Further, Plaintiff's expert has explained that the phrase “coverage area” could create confusion because there may be “areas within the coverage area that really aren't covered.” (Dkt. #33, Exhibit 3C, May 18, 2018 Blackburn dep. at 95:22–98:21).

As to the proper construction, the specification provides context for usage of the phrase “physically present” in terms of a region:

The signal from the ghost-mobile node 220 can cause an allocation of communications network resources, the resources being those needed for relaying communications between the communications network and the mobile node. Indeed, the signal from the ghost-mobile node 220 can elicit the same response from the network nodes defining the foreign agents 215, 230 as would be elicited were the mobile node 250 *physically present* in the predefined *region covered* by the particular foreign agent.

'417 Patent at 9:9–17 (emphasis added).

Finally, at the July 10, 2018 hearing, both sides were amenable to construing this disputed term to mean “when the mobile node is located outside of the region covered by the foreign agent.”

The Court therefore hereby construes “**when the mobile node is located in a geographical area where the foreign agent is not physically present**” to mean “**when the mobile node is located outside of the region covered by the foreign agent.**”

I. “a ghost-mobile node that creates replica IP messages on behalf of a mobile node” (’417 Pat., Cl. 1)

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“a ghost mobile node that creates messages encapsulated in IP packets, that contain the same information transmitted by and on behalf of a mobile node” ¹¹	“a ghost mobile node that creates forged IP messages such that the transmission source appears to be an associated mobile node” ¹²

(Dkt. #33 at p. 22; Dkt. #35 at p. 22; Dkt. #38, Exhibit A at p. 6).

1. The Parties’ Positions

Plaintiff argues that its proposal “reflects the clear teaching of the specification,” and Plaintiff urges that “the IP messages contain the same information transmitted by, and on behalf, of the mobile node, but not an identical IP message.” (Dkt. #33 at pp. 22–23 (citing ’508 Patent at 9:48–53 & 9:65–10:6)).

Defendants respond that “Plaintiff’s construction fails to incorporate the plain and ordinary meaning of ‘replica,’ for which at least three dictionaries agree means ‘duplicate’ or ‘exact copy or model.’” (Dkt. #35 at p. 23 (citing Exs. Q–S)). Defendants also argue that “Plaintiff’s construction finds no support in the specification and serves only to add more ambiguity.” (Dkt. #35 at p. 24).

Plaintiff replies: “Defendants’ Responsive Claim Construction Brief ignores the fact that the disclosure in the specification is not ‘forges,’ but ‘essentially forges,’ meaning that the packets are not identical.” (Dkt. #36 at p. 7 (citing ’417 Patent at 9:45–53)). Plaintiff argues that “[t]he content of a shared key, for example, must be identical in order for the mobile node to authenticate,

¹¹ Plaintiff previously proposed: “a virtual node including software instructions running on a device, that contains a transceiver for communicating with the mobile node that creates messages encapsulated in IP packets, that contain the same information transmitted by and on behalf of a mobile node.” (Dkt. #30 at p. 5).

¹² Defendants previously proposed: “Indefinite. Alternatively: ‘a ghost-mobile node that copies an IP registration request, authentication, and authorization message that a mobile node sends to a foreign agent to register with the foreign agent when it is physically present in the coverage area of the foreign agent.’” (Dkt. #30 at p. 5).

but the IP packet sending such message need not be identical.” (Dkt. #36 at p. 8). Further, Plaintiff submits that “Defendants ignore the fact that there is no antecedent basis for ‘the transmission source.’” (Dkt. #36 at p. 8).

2. Analysis

As a threshold matter, Defendants have cited inventor testimony,¹³ but such testimony is of little, if any, relevance in these claim construction proceedings. *See Howmedica*, 540 F.3d at 1346–47 (noting that inventor testimony is “limited by the fact that an inventor understands the invention but may not understand the claims, which are typically drafted by the attorney prosecuting the patent application”).

Claim 1 of the ’417 Patent recites, in relevant part (emphasis added):

1. A system for communicating between a mobile node and a communication network; the network having at least one communications network node that is interconnected using a proxy mobile internet protocol (IP), comprising:

...

a ghost-mobile node that creates replica IP messages on behalf of a mobile node, the ghost-mobile node handling signaling required to allocate resources and initiate mobility on behalf of the mobile node, the ghost-mobile node triggering signals based on a predicted physical location of such mobile node or distance with relation to the at least one foreign agent.

The specification discloses:

In the context of an IP-based network, the ghost-mobile node 220 can create “spoofed” Universal Datagram Packets (UDP) with the contents of a legitimate mobile node packet. The procedure can utilize raw sockets to construct the message, create all the registration and IP headers, and add the authentication extensions using, for example, the MD5 checksum and a shared key.

* * *

In any case, as the ghost-mobile node 229 *essentially forges* registration packets on behalf of the mobile node 250, no time-stamping or nonce numbers need be used. As an alternative, a shared key authentication can be required between the home

¹³ (See Dkt. #35, Exhibit N, May 9, 2018 Helal dep. at 186:1–17; *see also id.*, Ex. P, May 10, 2018 Hernandez-Mondragon dep. at 140:7–11).

agent, foreign agents, and the mobile node. Asymmetric authentication as in a protocol such as 802.1X can be used as an alternate to symmetric authentication for delegating authority to the ghost-mobile node 220.

* * *

Accordingly, the ghost-mobile node 220 can increase the speed with which handoff occurs, thereby reducing setup delay and avoiding information losses due to the dropping of datagram packets. The ghost-mobile node 220 can *replicate* the registration request, handle the creation of tunnels, and *replicate* authentication and authorization information from the mobile node 250, thus acting on behalf of the mobile node 250 before the mobile node is in range of a next foreign agent 215, 230.

'417 Patent at 9:18–24, 9:45–53 & 9:65–10:6 (emphasis added).

Defendants have not shown that this disclosure regarding “*essentially forges*” gives rise to a lexicography defining “replica” as “forged.” Particularly in light of the absence of any further explanation in the specification regarding the meaning of “forges” or “essentially forges,” Defendants’ proposal would tend to confuse rather than clarify the scope of the claims. Further, the specification nowhere states that an exact copy of an entire IP packet must be made.

Defendants have also cited dependent Claim 2 of the '417 Patent, which recites (emphasis added):

2. The system of claim 1, wherein signaling further comprises registration with a *replica* of the mobile node by the ghost-mobile node to communicate with the foreign agents, triggering tunneling and communication with a mechanism configured to maintain routing information to a mobile node.

But even though Claim 2 recites using a “replica,” the limitations added by Claim 2 do not inform the meaning of “replica” as used in the disputed term.

Defendants have also argued that Figure 3 of the '417 Patent illustrates a message from a ghost mobile node that is identical to a message sent by a mobile node, as defined in the Mobile IPv4 standard. (*See* Dkt. #35, Exhibit T, RFC 2002 at p. 27). But Figure 3 illustrates a format of a type of message, not the content of a particular message. Alternatively and in addition, Figure 3

relates to specific features of a particular disclosed embodiment that should not be imported into the claims. *See Phillips*, 415 F.3d at 1323.

Finally, Defendants have cited testimony by Plaintiff's expert that a replica is a "copy":

Q. Okay. And when we talk about a replica IP message, you say it has to be encapsulated in -- in IP packet. So are you saying that the header's got to take an IPv, IPv6 IP header format, and then the message has to be an exact copy of a message that would otherwise be sent by a mobile node?

A. Well, replicate, *a replica would be a -- would be a copy, you know, whether it's an exact copy, but it's a copy.*

Q. Do you have to replicate all the information in the message or just one field?

A. Yeah, I'd like to look at the spec before I comment on that.

Q. Do you think you could figure it out, looking at the spec, in a couple of minutes

--

A. No.

(Dkt. #35, Exhibit J, May 18, 2018 Blackburn dep. at 206:5–20). Although Plaintiff's expert equivocated as to whether or not a replica is an "exact copy," Plaintiff's expert twice stated that a replica is a "copy." (*Id.*).

The opinions of Defendants' expert regarding requiring an exact copy, however, are unpersuasive. (*Id.*, Exhibit O, May 17, 2018 Proctor dep. at 16:22–17:18 & 22:9–40:7). The extrinsic dictionary definitions cited by Defendants regarding an "exact copy" (Dkt. #35 at Exhibits Q–S) are likewise unpersuasive as to the specific context in which the word "replica" is used in the patent. *See Phillips*, 415 F.3d at 1321 ("heavy reliance on the dictionary divorced from the intrinsic evidence 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").

Instead, as in the above-reproduced portions of the specification, the specification uses the word "replicate" in the contexts of "replicat[ing] the registration *request*" and "replicat[ing] authentication and authorization *information*" so as to "act[] *on behalf* of the mobile node." '417 Patent at 9:65–10:6. This disclosure is consistent with Plaintiff's proposal of creating copies of

information to be used on behalf of a mobile node without necessarily creating an exact copy of an entire IP message.

To whatever extent a dispute remains as to the degree of “sameness” required by a “copy,” any such dispute presents questions of fact for the finder of fact rather than any question of law for claim construction. *See Acumed LLC v. Stryker Corp.*, 483 F.3d 800, 806 (Fed. Cir. 2007) (“[A] sound claim construction need not always purge every shred of ambiguity. The resolution of some line-drawing problems . . . is properly left to the trier of fact.”) (citing *PPG Indus. v. Guardian Indus. Corp.*, 156 F.3d 1351, 1355 (Fed. Cir. 1998) (“after the court has defined the claim with whatever specificity and precision is warranted by the language of the claim and the evidence bearing on the proper construction, the task of determining whether the construed claim reads on the accused product is for the finder of fact”)); *see also Eon Corp. IP Holdings LLC v. Silver Spring Networks, Inc.*, 815 F.3d 1314, 1318–19 (Fed. Cir. 2016) (citations omitted).

The Court therefore hereby construes **“a ghost-mobile node that creates replica IP messages on behalf of a mobile node”** to mean **“a ghost-mobile node that copies IP messages on behalf of a mobile node.”**

J. “updating, in a mobile node, a location in a ghost mobile node” (’417 Pat., Cl. 7)

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Plain and ordinary meaning (subject to agreed construction of “mobile node” and disputed construction of “ghost mobile node”)	Indefinite/incapable of construction

(Dkt. #30 at p. 5; Dkt. #33 at p. 23; Dkt. #35 at p. 25; Dkt. #38, Exhibit A at p. 7).

1. The Parties' Positions

Plaintiff argues: “No extraordinary efforts are required to define these terms, as the plain and ordinary meaning applies with support from references in the specification. These constructions are neither difficult nor ‘insolubly ambiguous.’” (Dkt. #33 at p. 23 (quoting *Datamize*, 417 F.3d at 1347)).

Defendants respond that “this phrase does not make sense as written,” and “[t]he ‘insolubly ambiguous’ indefiniteness standard stated in Plaintiff’s brief is obsolete.” (Dkt. #35 at p. 25). Defendants argue that “although the error is obvious, there is a reasonable debate about the appropriate correction because the claim is subject to multiple possible corrections.” (Dkt. #35 at p. 25).

Plaintiff replies that “[o]pposing expert opinions, like the ones here create a fact question that precludes any ‘clear-and-convincing’ finding.” (Dkt. #36 at p. 8).

2. Analysis

As a threshold matter, Defendants have cited inventor testimony,¹⁴ but such testimony is of little, if any, relevance in these claim construction proceedings. *See Howmedica*, 540 F.3d at 1346–47 (noting that inventor testimony is “limited by the fact that an inventor understands the invention but may not understand the claims, which are typically drafted by the attorney prosecuting the patent application”).

The specification discloses:

By continuously and/or periodically determining its position via the GSP [*sic*, GPS] unit or other technique, the ghost-mobile node 220 can extrapolate from the current location and predict future locations of the mobile node 250.

¹⁴ (*See* Dkt. #35, Exhibit N, May 9, 2018 Helal dep. at 202:22–203:5).

'417 Patent at 7:4–7; *see id.* at 8:45–9:5 (“Based upon the predicted future state of the mobile node 250, the ghost-mobile node 220 can determine which foreign agent 210, 215, 230 is likely to serve as the mobile node’s next communicative link.”).

Claim 7 of the '417 Patent recites (emphasis added):

7. A method, in a mobile node, for speeding handover, comprising the steps of:
 - updating, in a mobile node, a location in a ghost mobile node;*
 - determining a distance, in the ghost mobile node in communication with the mobile node, to a closest foreign agent with which the mobile node can complete a handover;
 - submitting on behalf of the mobile node, from the ghost mobile node, a registration to the foreign agent to which the mobile node is going to complete the handover; and
 - upon completing the handover, updating a registration in the mobile node.

Defendants have cited authority regarding judicial correction. *See Novo Indus., L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1357 (Fed. Cir. 2003). Yet, Plaintiff is not requesting judicial correction. Whereas Defendants argue that this disputed term is obviously an error, Plaintiff has argued that this disputed term can be readily understood. (Dkt. #33 at pp. 23–24). Defendants have argued that “it is unclear whether ‘a location’ is a current or predicted location of a mobile node” (Dkt. #35 at p. 25), but Defendants have not shown why any such limitation is required. The opinions of Defendants’ expert to the contrary are unpersuasive. (*See* Dkt. #35, Exhibit C, June 20, 2018 Proctor Decl. at ¶ 94). Instead, the disputed term recites merely “a location.” The meaning of this language is readily understandable. *See Nautilus*, 134 S. Ct. at 2129 (to avoid indefiniteness, a “patent’s claims, viewed in light of the specification and prosecution history” must “inform those skilled in the art about the scope of the invention with reasonable certainty”).

The Court therefore hereby expressly rejects Defendants’ indefiniteness argument. No further construction is necessary. *See U.S. Surgical*, 103 F.3d at 1568; *see also O2 Micro*, 521 F.3d at 1362; *Summit 6*, 802 F.3d at 1291.

The Court therefore hereby construes “**updating, in a mobile node, a location in a ghost mobile node**” to have its **plain meaning**.

K. “submitting on behalf of the mobile node, from the ghost mobile node, a registration to the foreign agent to which the mobile node is going to complete the handover” (’417 Pat., Cl. 7)

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Plain and ordinary meaning (subject to agreed construction of “mobile node)	“submitting on behalf of the mobile node, from the ghost mobile node, a registration to the foreign agent while the mobile node is located outside the coverage area of the foreign agent”

(Dkt. #30 at p. 5; Dkt. #33 at p. 24; Dkt. #35 at p. 26; Dkt. #38, Exhibit A at p. 7).

1. The Parties’ Positions

Plaintiff argues:

Defendants’ proposed construction improperly includes the limitation of “while the mobile node is located outside the coverage area of the foreign agent,” which is effectively Defendant’s construction for “when the mobile node is located in a geographical area where the foreign agent is not physically present” in Claim 1 of the ’417 Patent. This further confuses the issue, as Defendants presumably want two terms to have effectively the same meaning. Defendants proposed construction is improper.

(Dkt. #33 at p. 25).

Defendants respond by referring to their arguments as to “ghost mobile node,” “while the mobile node remains in the geographical current state,” and “when the mobile node is located in a geographical area where the foreign agent is not physically present.” (Dkt. #35 at pp. 26–27). Defendants argue that “[t]he spirit and crux of the claimed invention is the ghost mobile node’s ability to send a registration request on behalf of the mobile node while the mobile node is located outside the coverage area of the foreign agent.” (Dkt. #35 at p. 27 (citing ’417 Patent at 4:9–18, 6:35–38, 9:6–20 & 9:57–10:16)). Defendants also cite their prosecution history arguments as to similar limitations. (Dkt. #35 at p. 27).

Plaintiff’s reply brief does not address this term. (See Dkt. #36).

2. Analysis

Claim 7 of the ’417 Patent recites (emphasis added):

- 7. A method, in a mobile node, for speeding handover, comprising the steps of:
 - updating, in a mobile node, a location in a ghost mobile node;
 - determining a distance, in the ghost mobile node in communication with the mobile node, to a closest foreign agent with which the mobile node can complete a handover;
 - submitting on behalf of the mobile node, from the ghost mobile node, a registration to the foreign agent to which the mobile node is going to complete the handover;* and
 - upon completing the handover, updating a registration in the mobile node.

Defendants have failed to demonstrate why their prosecution history arguments as to the term “ghost mobile node” should be applied to the present disputed term. (See Dkt. #35 at pp. 26–27). Indeed, this disputed term already includes “ghost mobile node” as a constituent term.

The Court therefore hereby expressly rejects Defendants’ proposed construction. No further construction is necessary. See *U.S. Surgical*, 103 F.3d at 1568; see also *O2 Micro*, 521 F.3d at 1362; *Summit 6*, 802 F.3d at 1291.

The Court accordingly hereby construes “**submitting on behalf of the mobile node, from the ghost mobile node, a registration to the foreign agent to which the mobile node is going to complete the handover**” to have its **plain meaning**.

L. “upon completing the handover, updating a registration in the mobile node” (’417 Pat., Cl. 7)

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Plain and ordinary meaning (subject to agreed construction of “mobile node[”])	Indefinite/incapable of construction

(Dkt. #30 at p. 5; Dkt. #33 at p. 25; Dkt. #35 at p. 27; Dkt. #38, Exhibit A at p. 8).

1. The Parties' Positions

Plaintiff argues: “No extraordinary efforts are required to define this term, as the plain and ordinary meaning applies with support from references in the specification. This construction is neither difficult nor ‘insolubly ambiguous.’” (Dkt. #33 at p. 25 (quoting *Datamize*, 417 F.3d at 1347)).

Defendants respond that “updating a registration in a mobile node *after* completing the handover makes no sense” because “[u]pdating a registration in the mobile node is a part of the handover process, not something that occurs upon completing handover.” (Dkt. #35 at p. 27).

Plaintiff’s reply brief does not address this term. (*See* Dkt. #36).

2. Analysis

As a threshold matter, Defendants have cited inventor testimony,¹⁵ but such testimony is of little, if any, relevance in these claim construction proceedings. *See Howmedica*, 540 F.3d at 1346–47 (noting that inventor testimony is “limited by the fact that an inventor understands the invention but may not understand the claims, which are typically drafted by the attorney prosecuting the patent application”).

Plaintiff has cited the following disclosure in the specification:

The ghost-mobile node 220 signals the network communications node that defines the mobile node’s 250 next foreign agent 215, 230. The ghost-mobile node 220 signals the foreign agent 215, 230 ahead of the mobile node’s 250 arriving in the predefined region served by the foreign agent. The signal from the ghost-mobile node 220 can be a registration request. The signal from the ghost-mobile node 220 can cause an allocation of communications network resources, the resources being those needed for relaying communications between the communications network and the mobile node.

¹⁵ (*See* Dkt. #35, Exhibit N, May 9, 2018 Helal dep. at 207:5–19.).

'417 Patent at 9:3–12. This disclosure does not specifically discuss “updating a registration in the mobile node,” so this disclosure does not appear to inform the meaning of the disputed term, at least not directly.

Nonetheless, the claim language is sufficiently clear on its face. Claim 7 of the '417 Patent recites (emphasis added):

7. A method, in a mobile node, for speeding handover, comprising the steps of:
 - updating, in a mobile node, a location in a ghost mobile node;
 - determining a distance, in the ghost mobile node in communication with the mobile node, to a closest foreign agent with which the mobile node can complete a handover;
 - submitting on behalf of the mobile node, from the ghost mobile node, a registration to the foreign agent to which the mobile node is going to complete the handover; and
 - upon completing the handover, updating a registration in the mobile node.*

In particular, Defendants have not demonstrated any internal inconsistency based on “updating a registration” purportedly necessarily being part of “handover” because Defendants have not shown any definition or disclaimer in this regard. The opinion of Defendants’ expert lacks sufficient support in the intrinsic record and is unpersuasive. (Dkt. #35, Exhibit C, June 20, 2018 Proctor Decl. at ¶ 96).

The Court therefore hereby expressly rejects Defendants’ indefiniteness argument. No further construction is necessary. *See U.S. Surgical*, 103 F.3d at 1568; *see also O2 Micro*, 521 F.3d at 1362; *Summit 6*, 802 F.3d at 1291.

The Court therefore hereby construes “**upon completing the handover, updating a registration in the mobile node**” to have its **plain meaning**.

M. “means for registering said ghost mobile node or mobile node with the associated ghost foreign agent or foreign agent, while the mobile node remains in the geographical current state” (’508 Pat., Cl. 1)

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>This claim element is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Claimed Function: “registering said ghost mobile node or mobile node with the associated ghost foreign agent or foreign agent, while the mobile node remains in the geographical current state”</p> <p>Corresponding Structure: “a signal received by a computing device having operational software and a transceiver”</p>	<p>This claim element is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Indefinite for lack of adequate disclosure of a corresponding structure</p>

(Dkt. #30 at p. 4; Dkt. #33 at p. 26; Dkt. #35 at p. 27; Dkt #38, Exhibit A at p. 3).

1. The Parties’ Positions

Plaintiff argues that corresponding structure is apparent in the specification, and Plaintiff also cites the opinion of its expert. (Dkt. #33 at pp. 27–28).

Defendants respond that “there is no structure or disclosure in the specification of ghost mobile node or mobile node registering to a ghost-foreign agent.” (Dkt. #35 at p. 29).

Plaintiff replies that “[t]he specification discloses that the registration request signal is the structure that registers the ghost mobile node.” (Dkt. #36 at p. 9 (citing ’508 Patent at 10:55–67)).

2. Analysis

Title 35 U.S.C. § 112, ¶ 6 provides: “An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.”

The parties agree that this disputed term is a means-plus-function term governed by 35 U.S.C. § 112, ¶ 6, and the parties have not presented any dispute as to the claimed function. The parties dispute whether the specification discloses corresponding structure.

“The duty of a patentee to clearly link or associate structure with the claimed function is the quid pro quo for allowing the patentee to express the claim in terms of function under [§ 112, ¶ 6].” *Med. Instrumentation & Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1211 (Fed. Cir. 2003); *see Ergo Licensing, LLC v. CareFusion 303, Inc.*, 673 F.3d 1361, 1364 (Fed. Cir. 2012) (“a patentee is only entitled to ‘corresponding structure . . . described in the specification and equivalents thereof,’ not any device capable of performing the function”) (quoting 35 U.S.C. § 112, ¶ 6).

Plaintiff has cited the following disclosures in the specification:

The handoff typically entails the mobile node 250 signaling the next foreign agent 230, requesting registration.

* * *

The ghost-mobile node 220 signals the network communications node that defines the mobile node’s 250 next foreign agent 215, 230. *The ghost-mobile node 220 signals the foreign agent 215, 230* ahead of the mobile node’s 250 arriving in the predefined region served by the foreign agent. The signal from the ghost-mobile node 220 can be a *registration request*. The signal from the ghost-mobile node 220 can cause an allocation of communications network resources, the resources being those needed for relaying communications between the communications network and the mobile node.

* * *

The signal from the ghost-mobile node 220 results in a preemptive setup, one that is effected before the mobile node 250 arrives in the predefined area of coverage of the next foreign agent. The setup can entail all the aspects that occur in the beginning phase of a standard network connection negotiation, including the negotiation of protocol details, communication rates, and error-handling approaches. These are needed to allow the connection to proceed correctly and reliably, but absent the participation of the ghost-mobile node 220 would have to

await the arrival of the mobile node 250 in the predefined region covered by the foreign agent 215, 230.

* * *

Referring now particularly to FIG. 2B, as the mobile node 250 leaves the first foreign agent 215 and moves toward the next foreign agent 230, *the ghost-mobile node 220 can send a registration request to the foreign agent 215*. Accordingly, the foreign agent 215 can open a tunnel to the next foreign agent 230 and send a registration reply. As the mobile node 250 enters the communications range of the next foreign agent 230, and as the mobile node 250 has already received the advertisement from the ghost-foreign agent 225, *the mobile node 250 can send a registration request to the next foreign agent*. The mobile node 250 can then receive a registration reply as the ghost-mobile node 220 has already registered and allocated resources for the mobile node 250.

'508 Patent at 5:47–49, 9:6–15, 9:57–67 & 10:55–67 (emphasis added).

Plaintiff has cited authority that the corresponding structure requirement “is not a high bar.” *Biomedino, LLC v. Waters Techs. Corp.*, 490 F.3d 946, 950 (Fed. Cir. 2007).

Yet, as Defendants have pointed out, the claimed function recites “registering said ghost mobile node or mobile node with the associated *ghost foreign agent* or foreign agent.” The above-reproduced disclosures cited by Plaintiff relate to sending a registration request to a foreign agent, but no comparable disclosure is apparent as to sending a registration request to a *ghost* foreign agent. Indeed, during deposition, Plaintiff’s expert was unable to identify any disclosure in the specification that corresponds to this aspect of the claimed function:

Q. Okay. So going back to the means for registering, is there any signal that you are aware of that sends -- that begins a registration between a ghost mobile node and a ghost foreign agent?

A. I’d have to read through that there again to see.

Q. Just do you mind looking at that?

A. Yeah, as we’re -- as we’re sitting here today, I’m not aware of a signal --

Q. Okay.

A. -- without reading in detail.

Q. And are you aware of any signal that registers a mobile node to a ghost foreign agent in the patents-in-suit?

A. Again, I’d have to read it for detail.

Q. But sitting here today, can you cite to any --

A. Not without --

Q. -- signal that --

A. -- looking at it, no.

Q. Would it make any sense in the context of the invention for a ghost mobile node or a mobile node to register to a ghost foreign agent?

A. Sometimes things don't make sense, they -- they do happen, so I wouldn't be able to say that unless I . . .

Q. Is the purpose of the ghost foreign agent in the patent to simply announce the presence of the foreign agent at a time when the mobile node couldn't otherwise receive a signal from the foreign agent?

A. I believe so, yeah.

Q. And so there's no description, correct, in the patent of registering a mobile node or a ghost mobile node to a foreign agent [*sic*, ghost foreign agent], correct, that you are aware of sitting here?

A. Not -- there may be implied stuff, but I'd have to look at that.

Q. Do you understand that the claim, because it's written as a means for registering said mobile node -- well, strike that.

Do you understand, because the means for registering calls for registering said ghost mobile node or mobile node with the associated ghost foreign agent or foreign agent, that the claim requires that you be able to register the ghost mobile node to a ghost foreign agent?

A. That's one of the possibilities in the matrix, yes.

Q. Okay.

A. Mm-hmm.

Q. And it also requires that the mobile node be able to register with the ghost foreign agent, correct?

A. That's also --

[Objection]

A. -- in there, yeah.

(Dkt. #35, Exhibit J, May 18, 2018 Blackburn dep. at 181:7–183:12).¹⁶

At the July 10, 2018 hearing, Plaintiff pointed to the following disclosure in the specification:

Accordingly, the ghost-mobile node and the *ghost-foreign agent*, operating either individually or jointly, can cause network communication resources to be allocated preemptively rather than passively as in conventional communications networks in which handoffs typically only follow an exchange of setup information following a mobile node's arrival in the physical region covered by the foreign agent. The ghost-mobile node and ghost-foreign agent can also serve to "hide" handoff

¹⁶ Also of note, Plaintiff's reply brief addresses this disputed term but does not address this issue as to whether corresponding structure is disclosed for the portion of the claimed function that relates to registering with a *ghost* foreign agent. (See Dkt. #36 at p. 9).

operations from network layers, thereby hiding operations that would otherwise tend to reduce system performance.

'508 Patent at 4:8–18 (emphasis added). Here, too, however, Plaintiff has not persuasively shown how anything in this disclosure is “clearly link[ed] or associate[d]” with the claimed function. *Med. Instrumentation*, 344 F.3d at 1211. Also of note, to the extent that Plaintiff is pointing to the ghost-foreign agent as corresponding structure, the claim recites “a ghost-foreign agent” separate from the “means for registering . . .,” which suggests that the “means for registering . . .” is a structure distinct from the “ghost-foreign agent.” See *Becton, Dickinson*, 616 F.3d at 1254 (“[w]here a claim lists elements separately, the clear implication of the claim language is that those elements are distinct component[s] of the patented invention”) (citations and internal quotation marks omitted).

Finally, Plaintiff argued at the July 10, 2018 hearing that the language of this disputed term is self-supporting, that is, that the language of the term itself provides structure. Plaintiff seems to be interpreting this language as meaning registering a ghost mobile node or mobile node “by” a ghost foreign agent or foreign agent. The disputed term, however, recites that the “means” is for registering a ghost mobile node or mobile *with* the ghost foreign agent or foreign agent. Plaintiff’s suggestion of using the ghost foreign agent itself as structure for registering something with the ghost foreign agent has not been supported by authority and has not been shown to be consistent with the corresponding structure requirement of 35 U.S.C. § 112, ¶ 6 (which the parties have agreed applies to this “means for registering . . .” term).

In sum, Plaintiff has failed to demonstrate that the specification sets forth corresponding structure for performing the entirety of the claimed function, particularly as to registering with a ghost foreign agent. This failure has not been caused by lack of opportunity, as this issue was raised during the deposition of Plaintiff’s expert (reproduced above), in Defendants’ responsive

claim construction brief (cited above), and at the July 10, 2018 hearing. Plaintiff has simply been unable to identify any “clearly link[ed] or associate[d] structure.” *Med. Instrumentation*, 344 F.3d at 1211.

This lack of corresponding structure for the full claimed function results in indefiniteness. *See Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1312 (Fed. Cir. 2012) (“a means-plus-function clause is indefinite if a person of ordinary skill in the art would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim”); *see also Media Rights Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d 1366, 1374 (Fed. Cir. 2015) (“Where there are multiple claimed functions, as there are in this case, the patentee must disclose adequate corresponding structure to perform *all* of the claimed functions”) (citing *Noah*, 675 F.3d at 1318–19).

The Court therefore hereby finds that **“means for registering said ghost mobile node or mobile node with the associated ghost foreign agent or foreign agent, while the mobile node remains in the geographical current state”** is a means-plus-function term and the claimed function is **“registering said ghost mobile node or mobile node with the associated ghost foreign agent or foreign agent, while the mobile node remains in the geographical current state,”** but lack of corresponding structure renders this term **indefinite**.

N. “means for linking the mobile node with a foreign agent associated with said ghost foreign agent when the mobile node enters a respective geographical future state associated with said foreign agent” (’508 Pat., Cl. 1)

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>This claim element is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Claimed Function: “linking the mobile node with a foreign agent associated with said ghost foreign agent when the mobile node enters a respective geographical future state associated with said foreign agent”</p> <p>Corresponding Structure: “a transceiver”</p>	<p>This claim element is governed by 35 U.S.C. § 112, ¶ 6.</p> <p>Indefinite for failure to adequately disclose and/or link a corresponding structure</p> <p>Corresponding Structure (in the alternative): “a mobile node, ghost mobile node, foreign agent, and ghost foreign agent executing a process routine and/or software disclosed at 6:28–10:67, Figs. 2A & 2B and equivalents thereof”</p>

(Dkt. #30 at p. 4; Dkt. #33 at p. 28; Dkt. #35 at p. 29; Dkt #38, Exhibit A at p. 4).

1. The Parties’ Positions

Plaintiff argues that corresponding structure is apparent in the specification. (Dkt. #33 at p. 29).

Defendants respond that “Plaintiff’s position that a ‘transceiver’ alone can perform the claimed function is clearly mistaken.” (Dkt. #35 at p. 29). Defendants also argue that “[t]he portion of the specification upon which Plaintiff relies only describes the hardware used for linking but in no way explains the process for linking, particularly ‘when the mobile node enters a respective geographical future state associated with said foreign agent.’” (Dkt. #35 at p. 30 (citing 4:60–67 & 6:22–26)). Alternatively, Defendants argue that all of the processes disclosed in the ’508 Patent at 6:28–10:67 must work together. (Dkt. #35 at p. 30).

Plaintiff’s reply brief does not address this term. (*See* Dkt. #36).

2. Analysis

Legal principles regarding 35 U.S.C. § 112, ¶ 6 are set forth as to the “means for registering . . .” term addressed above. The parties agree that the present disputed term is a means-plus-function term governed by 35 U.S.C. § 112, ¶ 6, and the parties have not presented any dispute as to the claimed function. The parties dispute whether the specification discloses corresponding structure.

Claim 1 of the '508 Patent, for example, recites (emphasis added):

1. A system for handling mobile devices in a wireless communications network, the system comprising:

a mobile node communicatively linked to the wireless communications network, wherein the mobile node has a corresponding geographical current state and one or more predicted geographical future states;

at least one foreign agent identified for each of the geographical future states;

at least one ghost mobile node associated with the mobile node, wherein said ghost mobile node can announce to said foreign agent the presence of said ghost mobile node;

a ghost-foreign agent associated with said foreign agent, wherein said ghost foreign agent can announce to said mobile node or said ghost mobile node associated with the mobile node, the presence of said ghost foreign agent;

means for registering said ghost mobile node or mobile node with the associated ghost foreign agent or foreign agent, while the mobile node remains in the geographical current state; and

means for linking the mobile node with a foreign agent associated with said ghost foreign agent when the mobile node enters a respective geographical future state associated with said foreign agent.

Plaintiff has cited the following disclosures in the specification:

Indeed, as will be readily appreciated by those of ordinary skill in the art, the network nodes can be implemented with any information processing systems having the ability to communicate with one another via suitable wired and/or wireless communications links. * * *

The mobile node 250, as part of normal use, changes its point of attachment to the networks forming the interconnection of networks 200. The mobile node 250 can be a computing device having suitable operational software and a wireless *transceiver*. Accordingly, the mobile node 250 can engage in two-way wireless

communications with the communication network edge nodes, defining leaf foreign agents or simply foreign agents 215, 230.

* * *

In order for the network nodes to relay datagrams to the mobile node 250 when the mobile node is in a foreign network, the mobile node must be communicatively linked to a foreign agent 215, 230 corresponding to that particular foreign network.

* * *

The ghost-mobile node 220, for example, can be set of software instructions running on a device that is remote from the mobile node 250 and that contains a *transceiver* for communicating with the mobile node.

'508 Patent at 4:49–54, 4:60–67, 5:39–43 & 6:22–26 (emphasis added); *see id.* at 10:55–67.

Plaintiff's expert has opined that the corresponding structure for this "linking . . ." function is simply "a transceiver" because "the elements already know that the registration has been completed" when the mobile node arrives. (Dkt. #33, Exhibit 3C, May 18, 2018 Blackburn dep. at 191:4–14; *see id.* at 189:13–191:14). This opinion is persuasive and aligns with the separate recital of the above-discussed "means for registering . . ." *See Typhoon Touch*, 659 F.3d at 1385 ("the amount of detail that must be included in the specification depends on the subject matter that is described and its role in the invention as a whole, in view of the existing knowledge in the field of the invention").

The Court therefore hereby finds that "**means for linking the mobile node with a foreign agent associated with said ghost foreign agent when the mobile node enters a respective geographical future state associated with said foreign agent**" is a means-plus-function term, the claimed function is "**linking the mobile node with a foreign agent associated with said ghost foreign agent when the mobile node enters a respective geographical future state associated with said foreign agent,**" and the corresponding structure is "**a transceiver, and equivalents thereof.**"

CONCLUSION

The Court adopts the constructions set forth in this opinion for the disputed terms of the patents-in-suit. The parties are ordered that they may not refer, directly or indirectly, to each other's claim construction positions in the presence of the jury. Likewise, the parties are ordered to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the Court, in the presence of the jury. Any reference to claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.

SIGNED this 31st day of July, 2018.


AMOS L. MAZZANT
UNITED STATES DISTRICT JUDGE