

WILLIAMSON V. CITRIX ONLINE:
A FUNDAMENTAL SHIFT AND RETURN TO FORM
IN MEANS-PLUS-FUNCTION INTERPRETATION

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In an en banc opinion on July 16, 2015, the Federal Circuit sent shockwaves through the patent world by overturning a decade-long precedent that emphasized a “strong presumption” that a claim limitation lacking the word “means” is not subject to 35 U.S.C. § 112(f).¹ During its decade-long tenure, the strong presumption had facilitated an expansion of functional claiming that was unchecked by statutory constraint.² This landmark decision in *Williamson v. Citrix Online, LLC* (“*Williamson II*”) overturned a long line of cases starting from *Lighting World, Inc. v. Birchwood Lighting, Inc.*, which first established the strong presumption.³

Williamson II departed from the heightened standard established in *Flo Healthcare Solutions v. Kappos*, which required that a claim limitation invoking § 112(f) “essentially [be] devoid of anything that can be construed as structure.”⁴ In place of the strong presumption, *Williamson II* restored the pre-*Lighting World* standard for determining whether a non-“means” claim limitation invokes § 112(f): “whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure.”⁵

The bright line rule that the Federal Circuit established in *Lighting World* had the unintended consequence of spawning a plethora of functional claims with broad scope unbounded by statutory intent because of a

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1. *Williamson v. Citrix Online, LLC* (*Williamson II*), 792 F.3d 1339 (Fed. Cir. 2015) (en banc). Unless otherwise noted, pre-AIA 35 U.S.C. § 112(6) and AIA 35 U.S.C. § 112(f) will be collectively referred to as § 112(f) or 112(f).

2. *See Williamson II*, 792 F.3d at 1348.

3. 382 F.3d 1354 (Fed. Cir. 2004); *see id.*

4. *See Williamson II*, 792 F.3d at 1349 (citing *Flo Healthcare Solutions, LLC v. Kappos*, 697 F.3d 1367, 1374 (Fed. Cir. 2012)).

5. *Id.* at 1349 (citing *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996)). Claim limitations or terms lacking the word “means” are henceforth referred to as non-“means” limitations or terms.

technicality in claim drafting.⁶ Patent applicants exploited the bright line rule to draft functional claims without the term “means” to describe an invention based on what it does, without providing any detail on how it is made.⁷ Such claims are untethered to any particular implementation of the claimed invention.⁸ The *Williamson II* decision reduces the scope of some of these functional claims to disclosed embodiments by imposing the restrictions of § 112(f).⁹ The impact of *Williamson II* has been pervasive, propagating to the district courts and Patent and Trial Appeal Board (PTAB).¹⁰ For example, the PTAB has actively referenced *Williamson II* in administrative decisions *sua sponte*.¹¹

Although *Williamson II* is a step in the right direction to curb overly broad functional claims, it does not provide clarity on how to interpret the restored pre-*Lighting World* standard (whether a claim term is understood to have sufficiently definite structure) in view of common law that has developed in support of the strong presumption. This Note analyzes the development and impact of *Williamson II*. Part I explores the historical development of interpreting claim limitations under § 112(f) leading up to *Williamson II*. Part II examines the *Williamson II* decision. Part III investigates the application of *Williamson II* by the district courts and PTAB. Part IV analyzes two issues that remain unaddressed by *Williamson*

6. See *Williamson II*, 792 F.3d at 1349. The court noted that the “strong” presumption that a non-“means” claim limitation is not subject to § 112(f) had resulted in a “proliferation of functional claiming untethered to § 112, para. 6 and free of the strictures set forth in the statute.” *Id.*

7. See, e.g., Mark A. Lemley, *Software Patents and the Return of Functional Claiming* (Stanford Pub. Law, Working Paper No. 2117302, 2012), at 907, 909, 911, 919, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2117302 [<https://perma.cc/YC6W-GTC8>]; Kyle O. Logan, *Step-Plus-Function Claims: An Analysis of Federal Circuit Law*, 24 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 907, 911 (2013).

8. See *Blackboard, Inc. v. Desire2Learn, Inc.*, 574 F.3d 1371, 1383 (Fed. Cir. 2009) (“Without so limiting a claim, we noted, ‘the patentee has not paid the price but is attempting to claim in functional terms unbounded by any reference to structure in the specification.’”) (quoting *Aristocrat Techs. Austl. v. Int’l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008)).

9. See Michael Risch, *The Past and Future of Functional Claiming* . . . , WRITTEN DESCRIPTION BLOG (June 16, 2015), <http://writtendescription.blogspot.com/2015/06/the-past-and-future-of-functional.html> [<https://perma.cc/K7F9-DBM5>].

10. See, e.g., Order Construing the Terms of U.S. Patent Nos. 5,489,295, 5,993,481, 6,302,906, 5,676,696, *Lifepoint Scis. LLC v. Endologix, Inc.*, No. CV 12-1791-GMS, 2015 WL 4141819 at *4 n.8, (D. Del. July 9, 2015); see also Decision on Appeal, *Ex parte Sebastian*, No. 2013-006223 at 6, 2015 WL 4608191 at *3, (P.T.A.B. June 22, 2015).

11. See Decision on Institution of Inter Partes Review, *Incontact, Inc. v. Microlog Corp.*, No. IPR2015-00560, 2015 WL 4639627 at *4 n.3 (P.T.A.B. July 30, 2015); see also Decision on Appeal, *Ex parte Kermani*, 2015 WL 5317320 at *5 (P.T.A.B. Sept. 9, 2015).

It's reversal of the strong presumption in view of the common law that developed in support of the strong presumption. First, *Williamson II* has not addressed a shift from an objective standard of claim interpretation to a subjective standard, and second, *Williamson II* has not addressed how to interpret the structural character of multi-word adjectival terms. Part IV provides an overview of these issues and proposes a framework for determining whether non-“means” claims invoke § 112(f).

I. HISTORICAL DEVELOPMENT OF MEANS-PLUS-FUNCTION CLAIM INTERPRETATION

Functional claiming can be problematic for companies developing products because an “absence of clear boundaries” on functional claims fails to provide sufficient notice on whether a product infringes.¹² In order to determine whether an accused product infringes a patent claim, a company accused of infringement must engage in costly litigation, which siphons resources away from product development and innovative activity.¹³

The historical development of § 112(f) contemplated such negative implications of overly broad functional claiming and imposed statutory limits on the scope of functional claims.¹⁴ Cases decided before the establishment of the strong presumption in *Lighting World* applied reasoned objective criteria to determine whether a claim limitation invoked § 112(f).¹⁵ However, subsequent to *Lighting World*, the strong presumption facilitated a gradual departure from objective analysis toward an arbitrary

12. See, e.g., Lemley, *supra* note 7, at 906.

13. See *id.* at 931–32, 934 (“[T]rolls cost the economy \$500 billion over the last twenty years, mostly in the information technology industry.”).

14. See Brad A. Schepers, *Interpretation of Patent Process Claims in Light of the Narrowing Effect of 35 U.S.C. § 112(6)*, 31 IND. L. REV. 1133, 1134, 1139 (1998); see also *In re Donaldson Co., Inc.*, 16 F.3d 1189, 1193, 1195 (Fed. Cir. 1994) (“[O]ur holding in this case merely sets a limit on how broadly the PTO may construe means-plus-function language under the rubric of ‘reasonable interpretation.’”). The Federal Circuit clarified that the “reasonable interpretation” standard for examining § 112(f) claims in a patent application pending before the United States Patent Office (PTO) requires an evaluation of the structure disclosed within the application’s specification. *Id.*

15. See, e.g., *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996) (“Dictionary definitions make clear that the noun ‘detent’ denotes a type of device with a generally understood meaning in the mechanical arts, even though the definitions are expressed in functional terms.”).

inclination against invoking § 112(f) on non-“means” claim limitations, thereby effectively eroding statutory limits on functional claiming.¹⁶

A. OVERVIEW OF FUNCTIONAL CLAIMING

Patent applicants employ functional claiming to draft claims that describe an invention based on the functionality of the invention (e.g., what the claimed invention does), instead of the implementation of the invention (e.g., how the claimed invention operates in practice).¹⁷ As an analogy, functional claiming describes a claimed invention in terms of black boxes, without providing detail about the inner workings of the black boxes.¹⁸ Functional claiming provides broad coverage over various implementations that can carry out a same function, rather than being restricted to a specific implementation for executing the function.¹⁹

The 2011 America Invents Act (AIA) and the Patent Act of 1952 (“Patent Act”) provide for a specific case of functional claiming under § 112(f) that is limited to the embodiments “described in the specification and equivalents thereof.”²⁰ Section 112(f) covers both system claims (e.g., drafted in “means for” format), and method claims (e.g., drafted in “step for” format).²¹ The *Williamson II* decision addresses the issue of system

16. See, e.g., *Mass. Inst. of Tech. & Elecs. for Imaging, Inc. v. Abacus Software (MIT)*, 462 F.3d 1344, 1364 (Fed. Cir. 2006) (Michel, C.J., dissenting). The dissent stated:

Here, we have neither a dictionary definition to establish that ‘aesthetic correction’ is an appropriate A.Q. to suggest definite structure nor expert testimony that the accompanying description of the operation of the circuit, if any, connotes definite circuit structure—sequence of particular circuit components—to an artisan so that he could draw on paper the arrangement of the components needed. *Id.*

17. See Lemley, *supra* note 7, at 919, 923; see also Stephen Winslow, *Means for Improving Modern Functional Patent Claiming*, 98 GEO. L.J. 1891–92 (2009).

18. See Robert A. Hodges, *Black Box Biotech Inventions: When a Mere Wish or Plan Should Be Considered an Adequate Description of the Invention*, 17 GA. ST. U.L. REV. 831, 834–35 (2000).

19. See *Blackboard, Inc. v. Desire2Learn, Inc.*, 574 F.3d 1371, 1383 (Fed. Cir. 2009) (“Without so limiting a claim, we noted, ‘the patentee has not paid the price but is attempting to claim in functional terms unbounded by any reference to structure in the specification.’”) (quoting *Aristocrat Techs. Austl. v. Int’l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008)).

20. See 35 U.S.C. § 112 (1952) (pre-AIA); 35 U.S.C. § 112 (2011) (AIA).

21. See *Masco Corp. v. United States*, 303 F.3d 1316, 1326 (Fed. Cir. 2002); Paul Devinsky, *United States: Step-Plus-Function Analysis Is the “Key” to the Proper Claim Construction*, MONDAQ (Nov. 8, 2002), <http://www.mondaq.com/unitedstates/x/18665/Patent/StepPlusFunction+Analysis+Is+the+Key+to+the+Proper+Claim+Construction> [<https://perma.cc/2J5R-7LPL>]; see also *OI Corp. v. Tekmar Co., Inc.*, 115 F.3d 1576, 1583 (Fed. Cir. 1997); Jeffery Keuster, *Means-Plus-Function Claiming: Recent*

claims drafted using placeholder “nonce” words (e.g., “mechanism,” “element,” “device”) instead of the word “means” to avoid classification as means-plus-function terms under § 112(f), but intended to cover the breadth of a functional claim.²² Because *Williamson II* removes the strong presumption against invoking § 112(f) against non-“means” claim terms, such functional system claims may now invoke § 112(f).

B. HISTORICAL DEVELOPMENT OF § 112(F)

Concerns about the potential overbreadth of functional claims played a central role in the development of § 112(f). Congress first enacted § 112(6)²³ as a legislative response to the Supreme Court decision in *Halliburton Oil Well Cementing Co. v. Walker*.²⁴ In *Halliburton*, the Court held that functional claim language was indefinite and could not be used to describe the most crucial element of a combination claim that would impart “novelty” to the claim.²⁵ The Court found that all components of the disputed claim were known in the art, and that the only new contribution over the prior art was itself a well-known device.²⁶ The Court did not dispute the validity of the claim over the prior art, but instead focused on

Developments and New Considerations (July 1995), [http://www.kuesterlaw.com/mpf.html#\[19\]](http://www.kuesterlaw.com/mpf.html#[19]) [<https://perma.cc/RHC7-4RX8>].

22. See *Williamson II*, 792 F.3d 1339, 1350–1351 (Fed. Cir. 2015).

23. 35 U.S.C. § 112(6) of the 1952 Patent Act later became 35 U.S.C. § 112(f) of the America Invents Act without substantial modification.

24. See *Halliburton Oil Well Cementing Co. v. Walker*, 329 U.S. 1 (1946); Schepers, *supra* note 14, at 1139; Kuester, *supra* note 21.

25. See *Halliburton*, 329 U.S. at 8–9, n.7. The claims at issue related to methods and systems for determining a distance to a surface of fluid within an oil well. An exemplary claim at issue in *Halliburton* is provided below with inventive aspects in italics, written in functional form:

In an apparatus for determining the location of an obstruction in a well having therein a string of assembled tubing sections interconnected with each other by coupling collars, means communicating with said well for creating a pressure impulse in said well, echo receiving means including a pressure responsive device exposed to said well for receiving pressure impulses from the well and for measuring the lapse of time between the creation of the impulse and the arrival at said receiving means of the echo from said obstruction, and *means associated with said pressure responsive device for tuning said receiving means to the frequency of echoes from the tubing collars of said tubing sections to clearly distinguish the echoes from said couplings from each other.* (emphasis added).

26. *Id.* at 6–7 (“Walker’s contribution which he claims to be invention was in effect to add to Lehr and Wyatt’s apparatus a well-known device which would make the regularly appearing shoulder echo waves more prominent on the graph and easier to count.”).

the wording of the claims.²⁷ In focusing on the claim limitations describing the novel aspect of the claim, the Court expressed concerns that the patent was in a “field crowded almost, if not completely, to the point of exhaustion.”²⁸ The Court noted that because patents in such a crowded field “consist[] of a combination of old ingredients” that are “much more numerous than any other,” it was of the greatest importance that the description of the inventive combination be “full, clear, concise and exact.”²⁹

The *Halliburton* decision, at its time of issuance, brought clarity to inconsistent treatment of functional claims at the trial courts and appellate courts.³⁰ The Court presciently pointed out that “patents on machines which join old and well-known devices with the declared object of achieving new results . . . easily lend themselves to abuse,” and accordingly required clarity of such claims.³¹

The congressional enactment of § 112(6) legitimized the practice of functional claiming and overturned *Halliburton’s* judicial precedent.³² However, the drafters of the statute, perhaps recognizing the potential for abuse of functional claiming, explicitly limited the scope of § 112(6) claims to the “corresponding structure, material, or acts described in the specification and equivalents thereof” for patentability determinations.³³

The statutory text of § 112(6) has barely changed over the last half century. It emerged with minor amendments, as § 112(f), after the recent overhaul of the patent system via the AIA.³⁴

27. *Id.* at 7–8 (“[W]e can accept without ratifying the findings of the lower court that the addition of ‘a tuned acoustical means’ performing the ‘function of a sound filter’ brought about a new patentable combination, even though it advanced only a narrow step beyond Lehr and Wyatt’s old combination.”).

28. *Id.* at 10.

29. *Id.* at 11.

30. See Schepers, *supra* note 14, at 1139.

31. *Halliburton*, 329 U.S. at 10.

32. See Schepers, *supra* note 14, at 1140 (“In response to *Halliburton* and the uncertainty surrounding functional claim language prior to this landmark decision, Congress enacted 35 U.S.C. § 112(6) authorizing the expression of a claim element in terms of a means or step for performing a specific function.”).

33. See *id.* at 1140 (“Congress’ inclusion of the second clause of paragraph six indicates that they, like the Supreme Court, had concern over the broadness and ambiguity surrounding functional language.”).

34. Compare 35 U.S.C. § 112 (1952) (Patent Act of 1952), with 35 U.S.C. § 112 (2011) (AIA). The only modifications are addition of labels and clarification of joint inventors. *Id.*

C. INVOCATION OF § 112(F)

In the two decades prior to the *Williamson II* decision, the courts often considered whether a claim limitation invokes § 112(f), based on one of four scenarios: whether (1) a “means” limitation invoked § 112(f), (2) a “means” limitation did not invoke 112(f), (3) a non-“means” limitation invoked 112(f), or (4) a non-“means” limitation did not invoke § 112(f).³⁵ Judicial precedent established at least three criteria for determining whether a claim limitation invoked § 112(f). The issue of the strong presumption against invocation of § 112(f) for non-“means” claims first emerged in *Lighting World* and was subsequently expanded in the decade leading up to *Williamson II*.³⁶

1. Invocation of § 112(f) Before *Lighting World*

In determining whether a claim limitation invoked § 112(f) prior to *Lighting World*, the courts consistently applied the following criteria: (1) whether the disputed claim term connoted any structure³⁷ by its plain meaning, (2) whether the claim limitation recited any structure,³⁸ and (3) whether the claim limitation included a function linked to a disputed term.³⁹ These criteria are similar to the three-pronged analysis set forth in the Manual of Patent Examining Procedure (MPEP) used by Patent Examiners in the PTO and could apply regardless of whether the claim limitation explicitly recited the term “means.”⁴⁰ Judicial precedent has formalized these criteria into two rebuttable presumptions: (1) that use of the word “means” invokes § 112(f), and (2) that absence of the word “means” does not invoke § 112(f).⁴¹ The analysis below focuses on the instances where non-“means” terms invokes § 112(f).

35. As referred to herein, non-“means” limitation or non-“means” term shall be understood to be a limitation or term lacking the term “means.”

36. See *Williamson II*, 792 F.3d 1339, 1348–49 (Fed. Cir. 2015) (en banc) (“[J]ust a year after *Inventio*, we raised the bar even further . . .”).

37. See *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583–84 (“detent mechanism”); *Personalized Media Commc’ns v. Int’l Trade Comm’n (PMC)*, 161 F.3d 696, 698–700, 703–04 (Fed. Cir. 1998) (“digital detector”).

38. See *Rodime PLC v. Seagate Tech., Inc.*, 174 F.3d 1294, 1298–99, 1302–04 (Fed. Cir. 1999) (“positioning means . . . including: two support arms”).

39. See *York Prods., Inc. v. Cent. Tractor*, 99 F.3d 1568, 1574 (“means formed on . . . sidewall portions including . . . ridge members”).

40. See MPEP § 2181(I) (“3-prong analysis”).

41. See *Williamson II*, 792 F.3d at 1348 (citing *Personalized Media Commc’ns v. Int’l Trade Comm’n*, 161 F.3d 696, 703–704 (Fed. Cir. 1998)).

a) First Criterion: Whether the Claim Limitation Connotes Sufficient Structure

The first criterion evaluates the plain language of a disputed claim limitation, regardless of whether said limitation is written in means-plus-function format. If the limitation connotes sufficient structure to a skilled person, is not a generic structural term, and has a clear meaning, then the limitation does not invoke § 112(f).

i) Non-“Means” Terms Not Invoking § 112(f)

Courts have applied the first criterion to find that non-“means” claim limitations do not invoke § 112(f). In *Greenberg v. Ethicon Endo-Surgery, Inc.*, the Federal Circuit held that the non-“means” limitation “detent mechanism” did not invoke § 112(f).⁴² Instead, the Federal Circuit found that “detent mechanism” had “a generally understood meaning in the mechanical arts,” and cited to several dictionary definitions for “detent” to support its conclusion.⁴³

The disputed claim limitation was not written in means-plus-function form, although the plaintiff’s proposed claim construction was in functional form.⁴⁴ The court noted that the proposed construction in “functional terms” was not sufficient to convert a construed claim element into a “means for performing a specified function” that invokes § 112(f).⁴⁵ The court supported this statement by identifying two classes of devices that took names based on related functions.⁴⁶ A first class took names from functions performed (e.g., “filter,” “brake,” “clamp;” note the names are both a noun and a verb).⁴⁷ A second class took names that described their function (e.g.,

42. *Greenberg*, 91 F.3d at 1583–84.

43. *Id.*

44. *Id.* at 1581–82 (the claim limitation “detent mechanism defining the conjoint rotation of said shafts in predetermined intervals” was not written in “means for” form). *Id.* at 1583 (“[T]he definition of ‘detent mechanism’ provided by Dr. Greenberg’s expert (i.e., ‘[a]ny device for positioning and holding one mechanical part in relation to another so that the device can be released by force applied to one of the parts’) w[as] expressed in functional terms.”); see *OI Corp. v. Tekmar Co., Inc.*, 115 F.3d 1576, 1580–81 (Fed. Cir. 1997). The Federal Circuit has clarified that courts must separately evaluate each non-“means” terms within a means-plus-function claim limitation to determine whether the term invokes § 112(f). *Id.* The court held that § 112(f) did not apply to a term “passage” because it did not perform a claimed function of a means-plus-function limitation, but merely specified where the function took place. *Id.* at 1581 (“Although the passage may act upon the slug by channeling it while it is being passed, it is not the means that causes the passing. Rather, it is the place where the function occurs, not the structure that accomplishes it.”).

45. *Greenberg*, 91 F.3d at 1583.

46. *Id.*

47. *Id.*

“graspers,” “cutters,” “suture applicators;” note the names are nouns derived from verbs).⁴⁸

Although the Federal Circuit in *Greenberg* found that a non-“means” term did not invoke § 112(f), it warned against determining whether to invoke § 112(f) based only on use of the term “means,” citing to prior cases that found terms introduced by “so that” to be equivalent to “means for” terms.⁴⁹

The Federal Circuit heeded this warning in later cases. In *Personalized Media Communications v. Int’l Trade Commission* (“PMC”), it found that “a digital detector” did not invoke § 112(f), because it had “a well-known meaning to those of skill in the electrical arts connotative of structure.”⁵⁰ Even though the disputed claim limitation was written in function form (e.g., “detector for receiving”), the court still held that the claim limitation did not invoke § 112(f) because it connoted sufficient structure, was not a generic structural term, and had clear meaning based on dictionary definitions.⁵¹ *PMC* extended *Greenberg*’s reasoning from a non-“means” term not drafted in functional form to a non-“means” term drafted in functional form.⁵²

ii) Non-“Means” Terms Invoking § 112(f)

The Federal Circuit has applied the same reasoning from *Greenberg* and *PMC* to conclude that some non-“means” claim limitations lack sufficient structure and accordingly invoke § 112(f). In *Mas-Hamilton Group v. LaGard, Inc.*, the court found that “lever moving element” and “movable link member” invoked § 112(f) because said terms did not connote sufficient structure.⁵³ The court noted that the plaintiff had not shown evidence that “lever moving element” had a well-known meaning in the art.⁵⁴ No dictionary definitions were cited for these two terms.⁵⁵

48. *Id.* The court concluded that the term “detent” was similar to the terms of the first and second classes of devices “with a generally understood meaning in the mechanical arts.” *Id.*

49. *Id.* at 1584.

50. 161 F.3d 696, 704 (Fed. Cir. 1998).

51. *Id.*

52. *See supra* Section I.C.1.a)i). Recall that in *Greenberg v. Ethicon Endo-Surgery, Inc.*, the proposed construction, not the claim limitation itself, was in functional form. 91 F.3d 1580, 1583 (Fed. Cir. 1996).

53. 156 F.3d 1206, 1213–15 (Fed. Cir. 1998).

54. *Id.*

55. “[L]ever” and “link” arguably fall into the first class of *Greenberg* devices, taking names from functions performed. However, the term lever was used to describe a function instead of structure—“lever moving element”—and the term “link” might have been deemed a “general structural term” instead of structure known to one skilled in the art. *Id.*

b) Second Criterion: Whether the Claim Limitation Recites Structure

The second pre-*Lighting World* criterion for determining whether a claim limitation invokes § 112(f) asks whether the claim limitation as a whole recites sufficient structural elements understood by one of ordinary skill in the art. If the claim limitation recites sufficient structural elements, it does not invoke § 112(f).

In *Al-Site Corp. v. VSI International, Inc.*, the Federal Circuit found that a number of terms did not invoke § 112(f).⁵⁶ Instead of citing to dictionary definitions for claim terms, the court found that each disputed claim limitation as a whole recited sufficient structure.⁵⁷ In *Watts v. XL Systems*, the Federal Circuit similarly found that the claim limitation “joint . . . such that one joint may be sealingly [sic] connected . . . with another such joint” did not invoke § 112(f) because it included sufficient structure.⁵⁸

Unlike the first criterion, which has used dictionaries as an objective basis to determine whether a claim term connotes sufficient structure, the application of the second criterion has not used a clear objective basis for identifying structure. For example, the application of the second criterion to non-“means” terms in *Al-Site* and *Watts* appears to leave some ambiguity as to what constitutes sufficient structural elements. In *Al-Site*, the structural element of the “eyeglass contacting member” was an “encircling portion adapted to encircle part of a frame.”⁵⁹ Under the first criterion from *Greenberg* and *PMC*, there might be dispute as to whether “encircling portion” alone constitutes sufficient structure.

at 1213–15. If the plaintiff had argued that “link” was a well-known term with clear meaning (e.g., by citing to dictionary definitions), it might have prevailed on arguing for a non-112(f) interpretation of “link member.” *See id.*

56. 174 F.3d 1308, 1318 (Fed. Cir. 1999). The disputed terms included “eyeglass hanger member,” “eyeglass contacting member,” and “attaching portion attachable to a portion.” *Id.*

57. *See id.* at 1318 (“Moreover, although these claim elements include a function, namely, ‘mounting a pair of eyeglasses,’ the claims themselves contain sufficient structural limitations for performing those functions.”). As a first example, a claim recited structure for an “eyeglass hanger member” as “made from flat sheet material.” *Id.* at 1318. As a second example, a claim recited structure of an “eyeglass contacting member” as “having an encircling portion adapted to encircle a part of said frame.” *Id.* at 1319.

58. 232 F.3d 877, 881 (Fed. Cir. 2000) (“Specifically, the claim limitation recites ‘a second end formed with tapered external threads’ and refers to ‘a first end’ with ‘tapered internal threads.’ These terms clearly have reasonably well understood meanings in the art as names for structure.”).

59. *Al-Site*, 174 F.3d at 1318.

c) Third Criterion: Whether the Claim Limitation Includes a Function

Under the third criterion, if a claim limitation does not recite a function, it does not invoke § 112(f). In *York Products*, the Federal Circuit found that the claim limitation “means formed on the upwardly extending liner sidewall portions” did not invoke § 112(f) despite reciting the term “means”, in part, because it did not link the term “means” to a function.⁶⁰

d) The Rebuttable Presumptions Framework

Common law development has formalized the aforementioned three criteria into two rebuttable presumptions: (1) that use of the word “means” invokes § 112(f), and (2) that failure to use the word does not invoke § 112(f).⁶¹

A party can overcome the presumption that a “means” claim limitation should invoke § 112(f) if the claim limitation either (1) connotes sufficient structure (e.g., first criterion),⁶² (2) recites sufficient structure (e.g., second criterion),⁶³ or (3) does not include a function (e.g., third criterion).⁶⁴ Inversely, a party can overcome the presumption that a non-“means” claim limitation should not invoke § 112(f) if the claim limitation (1) does not connote structure when written in functional form (e.g., first and third criteria)⁶⁵ and (2) does not recite sufficient structure when written in functional form (e.g., second and third criteria).⁶⁶

60. *York Prods., Inc. v. Cent. Tractor*, 99 F.3d 1568, 1574 (Fed. Cir. 1996) (“Without an identified function, the term ‘means’ in this claim cannot invoke 35 U.S.C. § 112, ¶ 6.”).

61. *See Williamson II*, 792 F.3d 1339, 1348 (Fed. Cir. 2015) (citing *PMC*, 161 F.3d 696 (Fed. Cir. 1998)); *see also* MPEP 2181(I).

62. *Cole v. Kimberly-Clark Corp.*, 102 F.3d 524, 531 (Fed. Cir. 1996) (the disputed term, “perforation means,” was found not to invoke § 112(f)). The Federal Circuit noted that “[a]n element with such a detailed recitation of its structure, as opposed to its function, cannot meet the requirements of the statute.” *Id.*

63. *York Prods.*, 99 F.3d at 1573–74 (the disputed term was “means formed on the upwardly extending liner sidewall portions including a plurality of spaced apart, vertically extending ridge members”).

64. *See id.* (“Without an identified function, the term ‘means’ in this claim cannot invoke 35 U.S.C. § 112, ¶ 6.”).

65. *See, e.g., Mas-Hamilton Grp. v. LaGard, Inc.*, 156 F.3d 1206, 1213–14 (Fed. Cir. 1998) (the disputed non-means term was “movable link member”).

66. *See id.* at 1215 (“Further, we do not see that the remaining terms in the claim limitation other than those defining the two functions . . .”).

A rebuttable presumption, unless overcome by a challenger, will guide the interpretation of a disputed limitation.⁶⁷ For example, a claim limitation that recites “digital detector” is presumed not to invoke § 112(f) unless the rebuttable presumption is overcome.⁶⁸

2. *Invocation of § 112(f) After Lighting World and Before Williamson II*

In *Lighting World*, the Federal Circuit for the first time qualified the presumption that a non-“means” claim limitation does not invoke § 112(f) as a “strong one that is not readily overcome.”⁶⁹ The cases following *Lighting World* departed from the reasoned analysis of the three pre-*Lighting World* criteria and expanded the strong presumption. The decision in *Phillips v. AWH Corp.* may have facilitated a departure from relying upon objective extrinsic evidence (e.g., dictionaries as used in the first criterion).⁷⁰ After *Phillips*, the Federal Circuit expanded the scope of the “strong” presumption through a line of cases that related to “adjectival qualifiers” leading up to *Williamson II*.⁷¹

a) *Phillips* De-emphasizes the Importance of Extrinsic Evidence, Facilitating a Shift Towards Subjective Claim Interpretation

The *Phillips* decision, while not referencing the strong presumption in *Lighting World*, might have facilitated the expansion of the strong presumption by undermining the use of objective extrinsic evidence.⁷² In *Phillips*, the court criticized a methodology that “placed too much reliance on extrinsic sources such as dictionaries.”⁷³ Instead, it established a methodology for interpreting claim terms that starts with the context of a particular claim, and then looks at intrinsic evidence (e.g., a patent

67. See *Williamson II*, 792 F.3d at 1348 (citing *PMC*, 161 F.3d 696 (Fed. Cir. 1998)); see also MPEP 2181(I).

68. See *PMC*, 161 F.3d 696, 703–05 (Fed. Cir. 1998) (the disputed claim term was “digital detector”).

69. *Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1358 (Fed. Cir. 2004).

70. 415 F.3d 1303, 1320–21 (Fed. Cir. 2005) (en banc).

71. See, e.g., *Mass. Inst. of Tech. & Elecs. for Imaging, Inc. v. Abacus Software (MIT)*, 462 F.3d 1344, 1355 (Fed. Cir. 2006) (the disputed claim terms involved various “circuitry” modified by an adjectival qualifier); *Inventio AG v. Thyssenkrupp Elevator Americas Corp.*, 649 F.3d 1350, 1356, 1358 (Fed. Cir. 2011) (the disputed terms were “modernizing device” and computing unit”); *Apple, Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1296–97 (Fed. Cir. 2014) (the terms under consideration were variants of the term “heuristic”).

72. See *Phillips*, 415 F.3d at 1303, 1311.

73. *Id.* at 1320–21.

specification and prosecution history).⁷⁴ Extrinsic evidence such as “expert and inventor testimony, dictionaries, and learned treatises” are “less significant than the intrinsic record in determining ‘the legally operative meaning of claim language.’”⁷⁵ Because this framework de-emphasizes extrinsic objective evidence in favor of intrinsic evidence, it might have facilitated the departure from an objective analysis of disputed § 112(f) terms towards a subjective analysis based on subjective interpretation of the intrinsic record, a shift that facilitated expansion of the strong presumption.

b) The Federal Circuit Expands the Strong Presumption from *Lighting World* Through a Line of Cases Relating to Adjectival Qualifiers

The disputed claim term in *Lighting World* was a compound term that included an adjectival qualifier and a base term.⁷⁶ A subsequent series of cases expanded use of the strong presumption to find that increasing numbers of compound terms did not invoke § 112(f) based on interpretation of the adjectival qualifier.⁷⁷

Although *Lighting World* set a precedent for the “strength of the presumption,” it still provided reasoned analysis on whether a term invoked § 112(f).⁷⁸ The Federal Circuit noted that the standard was not whether a disputed term brought to mind a particular structure, but whether the term was “one that is understood to describe structure, as opposed to a term that is simply a nonce word or a verbal construct.”⁷⁹ The court in *Lighting World*, as in prior cases, relied upon objective meanings from dictionaries to construe a disputed term.⁸⁰ However, in *Lighting World*, the court focused on defining an adjective (“connector”) of a disputed term (“connector

74. *Id.* at 1313, 1317 (“Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification. . . . In addition to consulting the specification, we have held that a court ‘should also consider the patent’s prosecution history, if it is in evidence.’”).

75. *Id.* at 1317.

76. *Lighting World*, 382 F.3d at 1358–59 (“connector assembly”).

77. *See, e.g., MIT*, 462 F.3d 1344 (Fed. Cir. 2006) (the disputed claim terms involved various “circuitry” modified by an adjectival qualifier); *Inventio AG v. Thyssenkrupp Elevator Americas Corp.*, 649 F.3d 1350, 1356, 1358 (Fed. Cir. 2011) (the disputed terms were “modernizing device” and “computing unit”); *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1296–97 (Fed. Cir. 2014) (the terms under consideration were variants of the term “heuristic”).

78. *Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1360 (Fed. Cir. 2004).

79. *Id.*

80. *Id.* at 1360–61.

assembly).⁸¹ By focusing on the term “connector,” the court appeared to concede that the base term “assembly” might be accepted as a generic word.⁸²

In *MIT v. Abacus Software*, the Federal Circuit analyzed the base terms and adjectival modifiers of two compound terms to determine whether the compound terms invoked § 112(f).⁸³ The court found that the base term “mechanism” of a first compound term, “colorant selection mechanism,” did not have a sufficiently definite meaning.⁸⁴ The court then determined that the adjective “colorant selection” was “not defined in the specification,” had “no dictionary definition,” and did not have a “generally understood meaning in the art.”⁸⁵

In contrast to the finding that the base term “mechanism” did not have a sufficiently definite meaning, the court found that the base term “circuitry” of a second compound term, “aesthetic correction circuitry,” did connote sufficient structure based on dictionary definitions for “circuit” and “circuitry.”⁸⁶ The court also cited to precedent from an earlier case, *Apex v. Raritan*, where it concluded that the term “circuit” combined with a description of the operation of the circuit connoted sufficient structure to one of ordinary skill.⁸⁷ To respond to a dissenting opinion against the non-112(f) determination, the court reiterated the “strength of the presumption” for non-“means” claims.⁸⁸

The invocation of the strong presumption against the dissent appears to signal a shift from relying upon reasoned objective analysis toward an inclination against invoking § 112(f) on non-“means” claims. The dissent

81. *See id.*

82. Recall that in *Greenberg*, the court construed the term “detent” in “detent mechanism,” but did not consider whether the term “mechanism” was a nonce word. *See Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996).

83. *See MIT*, 462 F.3d at 1355 (disputed terms “colorant selection mechanism” and “aesthetic correction circuitry”) (“In contrast to the term ‘mechanism,’ dictionary definitions establish that the term ‘circuitry,’ by itself, connotes structure.”) (“In two of our prior cases we concluded that the term ‘circuit,’ combined with a description of the function of the circuit, connoted sufficient structure to one of ordinary skill in the art to avoid 112 ¶ 6 treatment.”).

84. *Id.* at 1354.

85. *Id.* at 1354.

86. *Id.* at 1355.

87. *Id.* at 1356 (citing *Apex, Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364, 1373 (Fed. Cir. 2003)).

88. *Id.* at 1356 (“In arguing to the contrary, the dissent appears to misapprehend the strength of the presumption that applies when the term ‘means’ does not appear in the claim.”).

foretells the problems that the strong presumption would create.⁸⁹ The dissent in *MIT* noted that the *Apex* decision, relied upon by the majority, concluded that “circuitry” connoted enough structure only in a limited context of certain adjectival qualifiers supported by technical dictionary definitions (e.g., interface circuit, logic circuit, etc.).⁹⁰ Critically, the dissent observed that the adjectival qualifier in the disputed claim limitation (“aesthetic correction circuitry”) did not appear to have a clear dictionary definition or known meaning in the art.⁹¹ Although the majority in *MIT* invoked the strong presumption to rebut the dissent, it did not employ a dictionary or other objective evidence to evaluate the term “aesthetic correction” that modified the term “circuitry.”⁹²

Following *MIT*, some cases led with the strong presumption as the guiding post. In *Inventio AG v. Thyssenkrupp Elevator Americas Corp.*, the Federal Circuit led with the strong presumption and then looked to the written description to construe the claim terms.⁹³ As in *MIT*, the court did not look to objective dictionary definitions for clarification on the adjectival qualifier or other disputed terms.⁹⁴ Instead, the court looked to the specification to determine whether a claim term connotes “sufficiently definite structure.”⁹⁵

In *Flo Healthcare Solutions, LLC v. Kappos*, the Federal Circuit raised the bar for the strong presumption such that the court was unwilling to invoke § 112(f) unless a limitation essentially is “devoid of anything that can

89. *Id.* at 1361–64 (Michel, C.J., dissenting).

90. *Id.* at 1361–62 (Michel, C.J., dissenting). The dissent also noted another case where the Federal Circuit extended the reasoning of *Apex* such that the use of “circuit” coupled with a description of the circuit’s operation may connote “sufficient structural meaning” when bolstered by expert testimony. *Id.* at 1363–64 (Michel, C.J., dissenting) (citing *Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1320 (Fed. Cir. 2004)).

91. *Id.* at 1364 (“Here, we face a description of only the circuit’s function, not of how it operates with other circuits or devices to carry out that function.”).

92. *Id.* at 1355–56.

93. *See Inventio AG v. Thyssenkrupp Elevator Ams. Corp.*, 649 F.3d 1350, 1356, 1358 (Fed. Cir. 2011) (the disputed terms were “modernizing device” and “computing unit”).

94. *Id.* at 1356, 1358 (the disputed adjectival qualifier was “modernizing”).

95. *Id.* at 1356, 1358. The court held that the term “modernizing device” connoted sufficient structure based on the treatment of the term as an electrical circuit in the device (e.g., connected to a computing unit), and based on the written specification, which described components of the modernizing unit. *Id.* at 1358–59. The court also found that the term “computing unit” did not invoke § 112(f) based on the specification, which referred to the “computing unit” as a computer. *Id.* at 1359–60.

be construed as structure.”⁹⁶ In this case, the court found that the term “height adjustment mechanism” did not invoke § 112(f).⁹⁷

In *Apple, Inc. v. Motorola, Inc.* (“*Apple*”), the Federal Circuit extended the principles of adjectival qualifiers established in *MIT* to determine that a number of disputed terms did not invoke § 112(f).⁹⁸ The majority followed a two-step inquiry: (1) determining whether a claim limitation invoked § 112(f), and (2) construing the claim by identifying corresponding structure described in the specification.⁹⁹

The dissent in *Apple* disagreed with the majority’s reliance upon the specification to determine whether a claim limitation invoked § 112(f).¹⁰⁰ The dissent was concerned that looking to the specification for structure to determine whether a claim limitation invoked § 112(f) would “eviscerate” means-plus-function claiming, with the “absurd result” that a term could only invoke § 112(f) if it has “no corresponding structure.”¹⁰¹

These Federal Circuit cases illustrate a trend of expanding the strong presumption against invocation of § 112(f) while shifting to a more subjective construction of the disputed claims terms. The strict objective standard for invoking § 112(f) from *Greenberg*, supported by dictionary definitions (e.g., “detent”), has given way to a more lenient standard that allows patentees to include black box interpretations like those in *Apple* (e.g., inputs, outputs, and interrelations thereof) in a specification.

II. THE *WILLIAMSON II* DECISION

In *Williamson II*, the Federal Circuit overruled the strong presumption established in *Lighting World* and overruled the strict requirement established in *Flo Healthcare* that a claim limitation must be “essentially [] devoid” of structure in order to invoke § 112(f).¹⁰² The court reset the

96. *Flo Healthcare Solutions, LLC v. Kappos*, 697 F.3d 1367, 1374 (Fed. Cir. 2012) (citing *Masco Corp. v. United States*, 303 F.3d 1316, 1327 (Fed. Cir. 2002)).

97. *Id.* at 1375.

98. 757 F.3d 1286, 1296–97 (Fed. Cir. 2014) (the terms under consideration were variants of the term “heuristic”).

99. *Id.* (“The overall means-plus-function analysis is a two-step process.”). In its analysis, the majority invoked the strong presumption and found that the “heuristic” terms had sufficiently definite structure, in part based on disclosure in the specification of inputs and outputs to heuristics, and how such outputs would be achieved. *Id.* at 1300–01 (“[T]he claim language and specification disclose the heuristics’ operation within the context of the invention, including the inputs, outputs, and how certain outputs are achieved.”).

100. *Id.* at 1334–35.

101. *Id.* at 1335–36.

102. *Williamson II*, 792 F.3d at 1349.

standard for determining whether a non-“means” claim invokes § 112(f) to “whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure.”¹⁰³ If the claim term is a means-plus-function term, the court construes the term first by identifying the claimed function and second by determining what structure corresponds to the claimed function.¹⁰⁴ If the court cannot identify structure, then the claim may be held indefinite under 35 U.S.C. § 112(b).¹⁰⁵

A. FACTS AND PROCEDURAL HISTORY

The plaintiff Richard A. Williamson (“Williamson”) asserted U.S. Patent No. 6,155,840 (“840 patent”) against multiple defendants including Citrix Online, LLC, Microsoft Corporation, and Cisco Systems, alleging infringement of products that related to remote access features.¹⁰⁶ An excerpt of the disputed claim is reproduced below including the disputed limitation in italics.

8. A system for conducting distributed learning among a plurality of computer systems coupled to a network, the system comprising:

...

a distributed learning control module for receiving communications transmitted between the presenter and the audience member computer systems and for relaying the communications to an intended receiving computer system and for coordinating the operation of the streaming data module.¹⁰⁷

The district court had issued a claim construction order holding that the term “distributed learning control module” was a means-plus-function term that invoked § 112(f).¹⁰⁸ Williamson appealed to the Federal Circuit, which reversed in *Williamson v. Citrix Online, LLC (“Williamson I”)*.¹⁰⁹ A subsequent en banc hearing vacated the *Williamson I* panel decision with

103. *Id.* at 1349 (citing *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996)).

104. *Id.* at 1351 (citing *Noah Sys., Inc. v. Intuit, Inc.*, 675 F.3d 1302, 1311–12, 1318–19 (Fed. Cir. 2012)).

105. *Id.* Unless otherwise noted, Pre-AIA 35 U.S.C. § 112(2) and AIA 35 U.S.C. § 112(b) will be collectively referred to as 35 U.S.C. § 112(b) or 112(b).

106. *See id.* at 1343.

107. *Id.* at 1344 (emphasis added).

108. *Id.* at 1345.

109. 770 F.3d 1371 (Fed. Cir. 2014).

respect to the term “distributed control module” and re-affirmed the district court holding that said term invoked § 112(f).¹¹⁰

B. THE *WILLIAMSON I* FEDERAL CIRCUIT PANEL DECISION

A two-judge majority of the Federal Circuit panel overturned the district court construction of “distributed learning control module” as a means-plus-function expression.¹¹¹ A one-judge dissent by Judge Reyna disagreed with the majority’s finding that the term “distributed learning control module” did not invoke § 112(f).¹¹²

The *Williamson I* majority reiterated the strong presumption from *Lighting World* and the heightened standard from *Flo Healthcare* that a claim limitation be “so devoid of structure that the drafter constructively engaged in means[-]plus-function claiming.”¹¹³ The majority criticized the district court for failing to “give weight to the strong presumption” based on the absence of the word “means.”¹¹⁴ The dispute focused on whether the base term “module” of the disputed term “distributed learning control module” connoted hardware or software to those skilled in the computer arts.¹¹⁵ The majority cited to a number of dictionaries to demonstrate that the term “module” would be understood to be a “software component” or “component of hardware system.”¹¹⁶

The *Williamson I* majority additionally criticized the district court for not considering the adjectival qualifier “distributed learning control” that preceded the base term “module.”¹¹⁷ In construing the adjectival qualifier, the majority cited only to the specification and not to any dictionaries as it had done for the base term “module.”¹¹⁸

The dissent in *Williamson I* contended that the term “distributed control learning module” did not connote sufficient structure because the term “module” was used as a “nonce” word in place of the term “means.”¹¹⁹ The dissent criticized the majority’s citation to dictionary definitions of “module” as either hardware or software because the definitions referred

110. *Williamson II*, 792 F.3d at 1354.

111. *Williamson I*, 770 F.3d at 1379.

112. *Id.* at 1380 (Reyna, J., dissenting).

113. *Id.* at 1378.

114. *Id.* at 1378–79.

115. *Id.*

116. *Id.*

117. *Id.* at 1380.

118. *Id.* This analysis follows *Apex* and *MIT*, which separately analyzed base terms and adjectival qualifiers. See *supra* Section I.C.2.b).

119. *Id.* at 1381–82 (Reyna, J., dissenting).

only to functional aspects of what hardware and software could do, but not to how the functions are implemented.¹²⁰ The dissent further criticized the majority's finding that the adjectival qualifier "distributed control learning" imparted structure to the claim limitation as a whole because neither the ordinary meaning of the adjectival modifiers, the specification, nor the prosecution history imparted any structural significance to said modifiers.¹²¹

C. THE *WILLIAMSON II* EN BANC FEDERAL CIRCUIT DECISION

An eleven-judge majority of the Federal Circuit overturned the *Williamson I* panel and reaffirmed the district court construction of "distributed learning control module" as a means-plus-function expression.¹²² The *Williamson II* majority overruled the strong presumption of *Lighting World* and heightened standard of *Flo Healthcare* that had formed the basis of the panel decision in *Williamson I*.¹²³ In place of the strong presumption, the court has restored the standard from *Greenberg*.¹²⁴ It noted that the "essential inquiry" for invocation of § 112(f) was "whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure."¹²⁵ When the words of a claim are insufficient to connote structure, then § 112(f) applies.¹²⁶ The majority cautioned against "blindly elevat[ing] form over substance" and presented a test that relied upon more than mere recitation of the term "means" to analyze whether a claim limitation invokes § 112(f).¹²⁷

The majority justified its departure from precedent because the bright line test of relying upon recitation of the term "means for" had resulted in "a proliferation of functional claiming untethered" to § 112(f) that were "free of the strictures set forth in the statute."¹²⁸ The issues noted here are similar to those raised earlier in the *MIT* dissent, which cautioned against

120. *Id.* at 1383 (Reyna, J., dissenting) ("The definitions disclose what software or hardware potentially do, not how it is done.").

121. *Id.* (Reyna, J., dissenting).

122. *Williamson II*, 792 F.3d 1339, 1343 (Fed. Cir. 2015) (en banc).

123. *Id.* at 1349–51.

124. *Id.* ("Henceforth, we will apply the presumption as we have done prior to *Lighting World*").

125. *Id.* at 1349 (citing *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996)).

126. *Id.* at 1348 (citing *Watts v. XL Sys., Inc.*, 232 F.3d 877, 880 (Fed. Cir. 2000)).

127. *Id.* at 1348 (citing *Cole v. Kimberly-Clark Corp.*, 102 F.3d 524, 531 (Fed. Cir. 1996)).

128. *Id.* at 1348–49.

claims that provided “a description of only the circuit’s function, not of how it operates with other circuits or devices to carry out that function.”¹²⁹

Turning to the specific facts of the case, the majority noted that the claim term under consideration was not merely the “distribution learning control module” but also the subsequent step, “for receiving communications.”¹³⁰ The majority commented that the claim was in a format “consistent with traditional means-plus-function claim limitations” and replaces the term “means” with “module,” a nonce word.¹³¹ It further described how generic terms and other nonce words may be tantamount to using “means” because they typically “do not connote sufficiently definite structure.”¹³² The adjectival qualifier merely described a function and also did not impart further structure.¹³³ Nothing in the intrinsic record indicated any additional structure.¹³⁴

The court dismissed the use of an expert declaration to provide support for structure that was not explicitly recited by the specification of a patent.¹³⁵ It reiterated that though one of ordinary skill could understand how to program a computer to perform a recited function (and therefore create a specialized computer), such knowledge “cannot create structure where none otherwise is disclosed”.¹³⁶ Having found that the claim term “distribution learning control module” invoked § 112(f), the court found the means-plus-function term indefinite under 35 U.S.C. § 112(b) because the specification did not clearly recite an algorithm necessary to provide the structure for the “means” term.¹³⁷

129. *MIT*, 462 F.3d 1344, 1364 (Fed. Cir. 2006) (Michel, J., dissenting).

130. *Williamson II*, 792 F.3d at 1350.

131. *Id.*

132. *Id.* at 1350–51 (citing *MIT*, 462 F.3d at 1344, 1354); *id.* at 1350 n.5 (citing *Ranpak Corp. v. Storopack, Inc.*, 168 F.3d 1316, No. 98-1009, 1998 WL 513598 (Fed. Cir. July 15, 1998) (unpublished)).

133. *Williamson II*, 792 F.3d at 1351.

134. *Id.*

135. *Id.*

136. *Id.* (citing *Function Media, L.L.C. v. Google, Inc.*, 708 F.3d 1310, 1319 (Fed. Cir. 2013)).

137. *Williamson II*, 792 F.3d at 1351–52, 1354 (citing *Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1311 (Fed. Cir. 2012)). The court recalled a two-step process whereby the claimed function must be first identified, followed by the claimed structure. The court found that the claim required a special purpose computer (e.g., “a general purpose computer programmed to perform particular functions”), and that no such structure was disclosed. *Id.* Expert testimony and displays of interfaces could not satisfy these requirements. *Id.*

III. APPLICATION OF *WILLIAMSON II* BY THE DISTRICT COURTS AND PTAB

The impact of the *Williamson II* decision has been expedient and immediate across the PTO and district courts.¹³⁸ Over twenty PTAB decisions and over twenty district court decisions have cited it.¹³⁹ In both the PTAB and district courts, *Williamson II*'s elimination of *Lighting World*'s strong presumption has facilitated a shift towards invoking § 112(f) against non-“means” claims.¹⁴⁰

A. APPLICATION OF *WILLIAMSON II* BY THE DISTRICT COURTS

The majority of federal court decisions citing *Williamson II* at the time this Note was written have been claim construction orders issued by district courts.¹⁴¹ The results of an empirical survey are summarized in Table 1.¹⁴²

Table 1: Invocation of § 112(f) in District Court Decisions citing to *Lighting World*.

	“Means”		Non-“means”	
	112(f)	Non-112(f)	112(f)	Non-112(f)
Pre-Williamson II	5 (83%)	1 (17%)	9 (43%)	21 (57%)
Post-Williamson II	7 (78%)	2 (12%)	10 (63%)	6 (37%)

The results show two metrics: (1) an absolute count of either first instances of an invocation of § 112(f) or a non-invocation of § 112(f) within a case, and (2) a percentage of invocation of § 112(f) and non-invocation of § 112(f), compared to an overall count. As observed from Table 1, the

138. Because the vast majority of post-*Williamson II* cases have been district court cases, the analysis here focuses on the district courts.

139. For PTAB decisions including a decision on appeal in patent application (Decision on Appeal, *Ex Parte* Sebastian, No. 2013-006223, 2015 WL 4608191 (P.T.A.B. Sept. 30, 2015)) and a decision in Inter Partes Review (Decision Denying Institution of Inter Partes Review, *Toyota Motor Corp. v. Cellport Sys., Inc.*, No. IPR2015-00634, 2015 WL 4934778 (P.T.A.B. Aug. 14, 2015)), see Appendix II. See Appendix I for district court cases considered both before and after *Williamson II*.

140. See Appendix II for a list of PTAB decisions and Appendix I for district court decisions. See also *supra* Sections III.A–III.B.

141. See, e.g., *Genband USA LLC v. Metaswitch Networks Ltd.*, No. 2:14-CV-33-JRG-RSP, 2015 WL 4722185 (E.D. Tex. Aug. 7, 2015).

142. See Theodore Eisenberg, *Empirical Methods and the Law*, 95 J. AM. STAT. ASS'N 665, 665–69 (2000). Due to the relatively small sample size of cases, caution should be exercised when drawing conclusions from this limited study. *Id.* at 668.

district courts appear more inclined to find that a non-“means” terms invokes § 112(f) after *Williamson II* than before.¹⁴³

While *Williamson II* has been widely applied, it has not provided sufficient guidance to trial courts on how to apply the pre-*Lighting World* standard to determine when a claim term invokes § 112(f). The various rationales employed by the district courts demonstrate a need for clearer guidance. First, at least one court endorsed the use of dictionaries to determine whether a non-“means” claim term included sufficient structure.¹⁴⁴ More specifically, the court cited to *Phillips* to justify the use of dictionaries, so long as the dictionary definition did not contradict a definition within a patent specification.¹⁴⁵ The court found that the disputed term connoted structure based on several dictionaries.¹⁴⁶

Second, some courts have cited to the *Greenberg* test referenced in *Williamson II*: “whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure.”¹⁴⁷ However, the test as applied in *Greenberg* was based on consistent dictionary definitions.¹⁴⁸ Although those court cases have nominally cited to *Greenberg*, they have applied tests from other cases that developed in the interim between *Lighting World* and *Williamson II* instead

143. To evaluate the impact of *Williamson II* on the district courts, a Westlaw search was performed on all district court cases citing to *Williamson II* as of November 2, 2015, and all district court cases citing to *Lighting World* within a two-year period before *Williamson II*. For list of district court decisions, see Appendix I. Each case was reviewed to find an instance of at least one of four scenarios: whether (1) a “means” term invoked § 112(f), (2) a “means” term did not invoke § 112(f), (3) a non-“means” term invoked § 112(f), and (4) a non-“means” term did not invoke § 112(f). For the first occurrence of a scenario in a case, a count of that scenario was incremented. For example, if a given case invoked § 112(f) against one “means” term, a count of the scenario of invocation of § 112(f) against “means” terms was incremented by one. If the same case did not invoke § 112(f) against three “means” term, a count of the scenario of non-invocation of § 112(f) against “means” terms was incremented only once. This reduces bias in the data from cases where a large number of “means” or non-“means” terms were evaluated. Only the first instance of a scenario has been counted to avoid bias from a variable number of terms considered in each decision.

144. *See* *Advanced Aerospace Techs., Inc. v. United States*, 122 Fed. Cl. 445, 478–79 (2015) (construing the term “sensor . . . for guidance in maneuvering”).

145. *See id.* at 479 (“[J]udges are free to consult dictionaries and technical treatises ‘at any time in order to better understand the underlying technology and may also rely on dictionary definitions when construing claim terms, so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents.’”).

146. *See id.*

147. *Williamson II*, 792 F.3d 1339, 1349 (Fed. Cir. 2015) (en banc).

148. *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996).

of the *Greenberg* test. For example, a court found several non-“means” terms to invoke § 112(f) while finding some other non-“means” terms to not invoke § 112(f).¹⁴⁹ It found that the term “telecommunications interface module” connoted structure because of the adjectival qualifier “telecommunications interface.”¹⁵⁰ This analysis, focusing on the adjectival qualifier, more closely resembles the analysis in the *MIT* case rather than the *Greenberg* case. Moreover, unlike *Greenberg*, no dictionaries were used to evaluate term “telecommunications interface.”¹⁵¹ The same court found that the terms “packetization module” and “echo cancellation module” did invoke § 112(f).¹⁵² The court noted that the terms as used in the claims could refer to any structure, but did not provide any clear reasoning to articulate why the terms could be so broad.¹⁵³ The court also found that the terms “interworking agent” and “protocol agent” did not invoke § 112(f) based on implication from the patent specification that “agents” are recognized software structure.¹⁵⁴ This test more closely resembles the analysis in *Apple*, which looked to the specification, instead of the one in *Greenberg*, which was based on objective understanding of a disputed term.

B. APPLICATION OF *WILLIAMSON II* BY THE PTAB

A similar analysis as described above was performed to compare post-*Williamson II* PTAB and federal district court decisions.¹⁵⁵ The results, tabulated in Table 2, suggest the PTAB is more inclined than district courts to invoke § 112(f) on non-“means” terms.

149. Supplemental Claim Construction Memorandum and Order, Genband USA LLC v. Metaswitch Networks Ltd., No. 2:14-CV-33-JRG-RSP, 2015 WL 4722185 at *13, *18 (E.D. Tex. Aug. 7, 2015) (finding that “packetization module[s] operable to . . . ” and “echo cancellation module[s] operable to . . . ” invoked § 112(f) and that “telecommunications interface module[s] operable to . . .”, “interworking agent”, and “a first/second protocol agent for . . . ” did not invoke § 112(f)).

150. *Id.* at *13.

151. *Id.*

152. *Id.*

153. *Id.* at *12.

154. *Id.* at *17.

155. To evaluate the impact of *Williamson II* on the PTAB, a Westlaw search was performed on all PTAB cases citing to *Williamson II* as of November 2, 2015. See Appendix II for list of cases. Each case was examined to find a determination of at least one of four scenarios enumerated for the district court cases. For the first occurrence of a scenario in a case, a count of that scenario was incremented. Only the first instance of a scenario has been counted to avoid bias of the variable number of terms under examination in each PTAB hearing. The results are summarized in the table above, showing the absolute count of first instances within a case and percentage of overall counts between § 112(f) and non-112(f) instances.

Table 2: Invocation of § 112(f) in PTAB decisions citing to *Lighting World*.

Post-Williamson II	“Means”		Non-“means”	
	112(f)	Non-112(f)	112(f)	Non-112(f)
District Court	7 (78%)	2 (12%)	10 (63%)	6 (37%)
PTAB	11 (92%)	1 (8%)	6 (75%)	2 (25%)

In several of the cases, the PTAB has *sua sponte* advised patent owners and patent applicants alike against using nonce words, citing *Williamson II*.¹⁵⁶ In contrast to the PTAB decisions, the district court decisions do not appear to have engaged in this *sua sponte* analysis. However, this may be a result of procedural differences between the PTAB and district courts.

Thus far, the PTAB has determined that two non-“means” terms do not invoke § 112(f). It found that the term “protocol translator” did not invoke § 112(f) simply because an examiner failed to present evidence to overcome the rebuttable presumption that a non-“means” term does not invoke § 112(f).¹⁵⁷ It also found that the term “client dictionary” did not invoke § 112(f) based on the *Greenberg* test (reinstated by *Williamson II*).¹⁵⁸ Specifically, the base term “dictionary” connoted sufficient structure based on multiple dictionary definitions.¹⁵⁹ This analysis appears to track the methodology applied in *Greenberg*, albeit only on a base term, and not on the compound term “client dictionary.”

In the decisions that have invoked § 112(f) against non-“means” claim limitations, the PTAB has generally cited the test of whether a term conveys “sufficiently definite structure,” although it has not explicitly referenced *Greenberg* in all decisions.¹⁶⁰ It conducted a two-part analysis to find that the term “digital pick up unit” invoked § 112(f), by separately considering

156. See, e.g., Decision on Institution of Inter Partes Review, *InContact, Inc. v. Microlog Corp.*, No. IP2015-00560, 2015 WL 4639627 at *4 n.3 (P.T.A.B. July 30, 2015).

157. See Decision on Appeal, *Ex parte Rodriguez*, No. 2012-010303 at 7, 2015 WL 5000866 at *4 (P.T.A.B. Aug. 20, 2015).

158. See Decision on Appeal, *Ex parte Sebastian*, No. 2013-006223 at 12, 2015 WL 4608191 at *6 (P.T.A.B. Sept. 30, 2015) (“[W]e conclude a person of ordinary skill in the art would understand the term ‘client dictionary’ to be the name for structure, . . .”).

159. See *id.*

160. See Decision on Institution of Inter Partes Review, *Facebook, Inc., v. TLI Commc’ns, LLC*, No. IPR2015-00778 at 14, 2015 WL 5139353 at *9 (P.T.A.B. Aug. 28, 2015) (noting that the “term ‘unit’ is so broad that it does not convey sufficiently definite structure,” but not citing *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580 (Fed. Cir. 1996)); see also *Sebastian*, *supra* note 158, at 13, *7 (citing *Greenberg*).

the base term “unit” and adjectival qualifier “digital pick up.”¹⁶¹ It determined that the base term “unit” was so broad as not to have sufficiently definite structure, and concluded that the adjectival qualifier “digital pick up” was functional and not structural.¹⁶² However, in conducting this test, the PTAB did not appear to cite to any dictionaries.

The surveys of cases in the PTAB and district courts demonstrate that since *Williamson II* overruled the *Lighting World* strong presumption, courts have become more likely to invoke § 112(f) against non-“means” claims. However, less apparent is whether the PTAB and district courts are consistently applying the *Greenberg* test that the *Williamson II* court reinstated.

IV. ISSUES UNADDRESSED BY *WILLIAMSON II*

The *Williamson II* decision has made a clear impact on the patent world by making it easier for district courts and the PTAB to invoke § 112(f) against non-“means” claims by lowering the strength of the rebuttable presumption to its level pre-*Lighting World*.¹⁶³ However, while courts may be citing to the *Greenberg* test set by *Williamson II*, they do not appear to be uniformly applying the test.¹⁶⁴ Guidance on the proper application of the *Greenberg* test is necessary, especially for compound terms, including multi-word adjectival qualifiers to a base term (e.g., “distribution learning control module”). Such guidance is particularly necessary in view of common law developed during tenure of strong presumption.

A. STATUS OF THE COMMON LAW DEVELOPED DURING THE TENURE OF THE STRONG PRESUMPTION

A series of court cases expanded the scope of the strong presumption during its decade-long tenure in at least two aspects: 1) shifting an objective standard of interpreting claim terms to a subjective standard, and 2) expanding the application of multi-word adjectival qualifiers to impart structure to a term. Although *Williamson II* overruled the strong presumption of *Lighting World* and overruled the heightened standard of *Flo Healthcare* that a § 112(f) claim limitation be “devoid” of structure, it

161. See Decision on Institution of Inter Partes Review, Facebook, Inc., v. TLI Commc’ns, LLC, No. IPR2015-00778 at 14, 2015 WL 5139353 at *7 (P.T.A.B. Aug. 28, 2015).

162. *Id.*

163. See *supra* Part III.

164. *Id.*

has not affected the disposition of the aforementioned two aspects of the post-*Lighting World* common law.¹⁶⁵

1. *Williamson II Has Not Addressed a Shift from an Objective Standard of Interpreting Claim Terms to a Subjective Interpretation*

Williamson II has not clarified whether its reference to the *Greenberg* test also promotes a return to objective extrinsic evidence such as dictionary definitions over the intrinsic record. In view of the *Phillips* methodology of first considering intrinsic evidence before extrinsic evidence, there may be some tension regarding primary reliance upon objective extrinsic evidence.

A first set of cases shifted the focus of claim interpretation from an objective standard (e.g., from dictionaries in *Greenberg* and *PMC*) to a subjective one based on a patentee's specification. *Phillips* laid the groundwork for the shift by emphasizing the intrinsic record such as the specification and prosecution history over the extrinsic sources, such as dictionaries and other documents.¹⁶⁶ In *Inventio*, the court found that the specification can impart structure to a claim term when determining whether the claim term invokes § 112(f).¹⁶⁷ In *Apple*, the court built upon this line of reasoning to find that various "heuristic" terms connoted sufficient structure based on the description of inputs and outputs in the specification.¹⁶⁸ By this time, the Federal Circuit appeared to have departed from the once-objective standard of *Greenberg* and *PMC* that was at least grounded in objective evidence. Instead, it expanded to a standard where an applicant could draft patent specifications to include a functional description (e.g., input, output, and purported function) within a specification, and then obtain a functional claim by virtue of that inclusion. The dissent in *Apple* points out this absurdity.¹⁶⁹

Williamson II provides some guidance on the role of extrinsic evidence versus intrinsic evidence in determining whether non-"means" claim

165. *Williamson II*, 792 F.3d 1339, 1349 (Fed. Cir. 2015) (en banc).

166. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1320 (Fed. Cir. 2005) (en banc). The Federal Circuit stated:

Although the concern expressed by the court in *Texas Digital* was valid, the methodology it adopted placed too much reliance on extrinsic sources such as dictionaries, treatises, and encyclopedias and too little on intrinsic sources, in particular the specification and prosecution history.

167. *Inventio AG v. Thyssenkrupp Elevator Ams. Corp.*, 649 F.3d 1350, 1356, 1358 (Fed. Cir. 2011).

168. *Apple, Inc. v. Motorola, Inc.*, 757 F.3d, 1286, 1304 (Fed. Cir. 2014).

169. *Id.* at 1335–36 (Rader, C.J., dissenting).

limitations invoke § 112(f). In support of extrinsic evidence, the *Williamson II* court found the term “module” to be a well-known nonce word based on precedent from other cases.¹⁷⁰ However, *Williamson II* also diminished the role of subjective extrinsic evidence by refusing to consider an expert declaration to create structure that is undisclosed within a patent specification.¹⁷¹

2. *Williamson II Has Not Clarified the Application of Multi-Word Adjectival Qualifiers to Impart Structure to a Term*

A second set of cases expanded the scope of multi-word adjectival qualifiers that did not invoke § 112(f). *MIT* expanded the scope of the *Apex* decision such that the base term “circuit,” considered a structural term, combined with nearly any “description of the function of the circuit” would result in a structural term.¹⁷² *Flo Healthcare* subsequently extended *MIT* to use compound adjectival qualifiers, such as “height adjustment” to impart structure to non-structural base terms such as “mechanism.”¹⁷³ Although *Flo Healthcare* might mirror *Greenberg*’s analysis at first glance,¹⁷⁴ *Flo Healthcare* only considered a portion of a multi-word adjectival qualifier (“adjustment” instead of “height adjustment”), compared to *Greenberg*, which considered a single word (“detent”).¹⁷⁵

Williamson II has not clarified how courts should evaluate adjectival qualifiers. *Williamson II* found that the compound adjectival qualifier “distributed learning control” did not impart sufficient structure to the base term “module” but did not provide clear reasoning to explain why it was insufficient.¹⁷⁶

In view of *MIT*, *Flo Healthcare*, and *Apple*, the current methodology for evaluating compound terms appears to be a two-part analysis that first considers the base term and then considers the compound adjectival qualifier. If a base term is sufficiently structural (e.g., circuit), then the compound term is deemed to be structural without further analysis of the adjectival qualifier, regardless of whether an objective definition of the

170. *Williamson II*, 792 F.3d at 1350.

171. *Id.* at 1351.

172. *MIT*, 462 F.3d, 1344, 1355–56 (Fed. Cir. 2006).

173. *Flo Healthcare Solutions, LLC v. Kappos*, 697 F.3d, 1367, 1375 (Fed. Cir. 2012).

174. The disputed term in *Flo Healthcare* was “height adjustment mechanism” while the disputed term in *Greenberg* was “detent mechanism.” *See id.*; *Greenberg*, 91 F.3d at 1583–84. The adjectival qualifiers “adjustment” and “detent” were construed using dictionaries. *Id.*

175. *Flo Healthcare*, 697 F.3d at 1374–75.

176. *Williamson II*, 792 F.3d 1339, 1351 (Fed. Cir. 2015) (en banc).

adjectival qualifier is ascertainable.¹⁷⁷ Courts may determine the structural character of a base term (e.g., “heuristic”) by examining the intrinsic record.¹⁷⁸ If a base term (e.g., a nonce word such as “mechanism”) does not connote structure, then the adjectival qualifier is considered.¹⁷⁹ If the adjectival qualifier has a portion (e.g., “adjustment” from “height adjustment”) that can be deemed to be structural, then the entire term may be deemed structural.¹⁸⁰

Accordingly, two issues that require clarification after *Williamson II* are (1) the role of extrinsic evidence versus intrinsic evidence in the construction of a base term and adjectival qualifiers, and (2) whether construction of portions of adjectival qualifiers is sufficient to determine that the whole adjectival qualifier connotes sufficient structure.

B. STANDARD OF WHAT INDICATES SUFFICIENT STRUCTURE TO ONE OF ORDINARY SKILL IN THE ART

Courts may apply the three pre-*Lighting World* criteria to provide a framework to determine whether a non-“means” claim term invokes § 112(f) in view of the common law developments discussed in Section IV.A. The three criteria are: (1) whether the disputed claim term connotes any structure¹⁸¹ by its plain meaning, (2) whether the claim limitation recites any structure,¹⁸² and (3) whether the claim limitation includes a function linked to the “means.”¹⁸³ The proposed framework provided here assumes that a disputed claim term is a compound term consisting of a base term and an adjectival qualifier. The proposed framework would also notify patent applicants on how to draft claims to use objectively understood structural terms to avoid invocation of § 112(f).

1. *Application of the First Pre-Lighting World Criterion Should Be Modified to Construe Whole Adjectival Qualifiers Based on Consistent Objective Evidence*

Courts applying the first criterion have used objective evidence in the form of consistent dictionary definitions to determine whether a claim term

177. *MIT*, 462 F.3d at 1355–56.

178. *Apple, Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1296–97 (Fed. Cir. 2014).

179. *Flo Healthcare*, 697 F.3d at 1374–75.

180. *Id.*

181. *See Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996) (“detect mechanism”); *PMC*, 161 F.3d 696, 704 (Fed. Cir. 1998) (“digital detector”).

182. *See Rodime PLC v. Seagate Tech., Inc.*, 174 F.3d 1294, 1298–99, 1302–04 (Fed. Cir. 1999) (“positioning means . . . including: two support arms”).

183. *See York Prods., Inc. v. Cent. Tractor*, 99 F.3d 1568, 1574 (“means formed on . . . sidewall portions including . . . ridge members”).

had a clear meaning that connoted structure to one of ordinary skill. In *Greenberg*, adjectival qualifiers could still impart structure to a disputed nonce term.¹⁸⁴ In this proposed framework, courts use objective evidence in the form of consistent dictionary definitions to construe whole compound terms (including adjectival qualifiers and base terms), unless the patent specification defines the disputed term in non-functional terms. If the patent specification includes a definition of a claim term in non-functional terms, the claim term may be construed under non-112(f) doctrine of equivalents based on the definition.

This approach is consistent with *Greenberg* because both approaches permit construction of adjectival qualifiers, although the proposed framework also requires courts to construe the entirety of an adjectival qualifier instead of portions. This requirement brings clarity to construction of long claim terms. If courts cannot find an objective definition for a claim term containing a long adjectival qualifier from objective sources, then one of ordinary skill in the art would likely not have understood what the claim term meant. Accordingly, courts should restrict such a long claim term to the definitions and embodiments disclosed within the specification. *Greenberg* was silent on this issue as it considered only single word adjectival qualifiers. The proposed framework is consistent with the *Phillips* decision because it first considers definitions from the intrinsic record (e.g., the patent specification), subject to the exclusion of functional definitions.

The construction of the entire adjectival qualifier would help curtail drafting techniques that use non-structural functional adjectives to modify structural terms (e.g., “aesthetic correction circuitry”) in attempting to avoid § 112(f) classification. It also removes bias about selectively construing portions of lengthy adjectival qualifiers. The provision for definitions with a patent specification still permits a patentee to be its own lexicographer in drafting a patent. The restriction on non-functional definitions curtails the black box claiming issues in *Apple* whereby patentees defined structure in functional form (e.g., by defining inputs and outputs for a term instead of clear implementations).

The use of objective extrinsic evidence helps to maintain a level of uniform clarity across patents. If a disputed term is not objectively understood based on public technical references, then it should not meet the *Williamson II* standard that “words of the claim are understood by

184. See *Greenberg*, 91 F.3d at 1583. The court found that “detect mechanism” did not invoke § 112(f). *Id.* But see *Williamson II*, 792 F.3d 1339, 1351 (Fed. Cir. 2015) (en banc) (classifying “mechanism” as a nonce word).

persons of ordinary skill” as “the *name* for structure.”¹⁸⁵ Moreover, the *Williamson II* court’s citation of *Greenberg* and other pre-*Lighting World* cases in the declaration of its standard might be interpreted as an endorsement of pre-*Lighting World* methodology.¹⁸⁶ The proposed framework permits some flexibility in definition consistency since a unanimous consensus for a definition may not always be possible.

i) Implementation of the Framework

Overcoming the lower post-*Williamson II* rebuttable presumption still presents a challenger with a difficult task: proving negative conditions that a claim term “*fails* to ‘recite sufficiently definite structure’” or that words of a claim are *not* understood by persons of ordinary skill in the art.¹⁸⁷ Accordingly, in order to limit functional claiming in the context of this rebuttable presumption, limits should apply to counterarguments that a patentee/applicant may present after initial arguments presented by a challenger. The proposed framework follows these steps:

1. A challenger first provides arguments to overcome the rebuttable presumption that § 112(f) does not apply to a non-“means” term.
2. The burden then shifts to the patentee to demonstrate that a non-“means” term is clearly understood by one of ordinary skill in the art. Limits would be placed on the patentee’s response according to the three criteria discussed in Sections I.C.1(a)–(c).

A challenger may provide initial arguments on a base term and an adjectival qualifier. The challenger might argue that a base term is a nonce term (e.g., “mechanism,” “element”) by citing to precedent in other cases. The challenger might also argue that the entirety of an adjectival qualifier does not connote a well-known meaning if the whole qualifier cannot be discerned consistently from objective sources such as dictionaries. After the challenger submits its initial argument, the burden shifts to the patentee/applicant to demonstrate that the disputed claim limitation does describe sufficiently definite structure.

At this procedural step, in view of the difficulty for a challenger to prove a negative condition to rebut the presumption and to provide a clear and objective standard for construing a claim term, courts may apply the modified first criterion proposed above to require construing a whole

185. See *Williamson II*, 792 F.3d at 1349 (citing *Greenberg*, 91 F.3d at 1583; *Watts*, 232 F.3d at 880; *PMC*, 161 F.3d at 703) (emphasis added).

186. *Id.*

187. *Id.* (emphasis added).

adjectival qualifier instead of portions of the claim term. As discussed above, this curtails drafting techniques that add non-structural functional modifiers to structural base terms and provides a clear objective standard for patent applicants and patent challengers to construe terms. Accordingly, patentees/applicants would not be able to selectively construe portions of an adjectival qualifier and would be on notice to draft claims accordingly. Furthermore, definitions within a patent specification may be relied upon, so long as said definitions are not in functional form. This places another restriction against using drafting techniques to cloak functional limitations as structure. Additionally, this provides a clear framework for determining whether a claim term invokes § 112(f), brings clarity to claim construction, and also puts potential infringers on notice.

2. *Application of the Second Pre-Lighting World Criterion Depends in Part on the Interpretation of the Objective Evidence Under the First Pre-Lighting World Criterion*

The second criterion is partly a variation of the first because it looks to other claim terms within the limitation to impart structure to the claim limitation as a whole, instead of examining the plain meaning of a disputed claim term.¹⁸⁸ The second criterion may ultimately reduce to an inquiry on whether other terms with a claim limitation connote sufficient structure to impart structure to the limitation as a whole. In such a case, courts should apply the proposed analysis set forth under the first criterion in order to determine whether other terms within the claim limitation are understood by one of ordinary skill to connote structure.

3. *The Third Pre-Lighting World Criterion Alone Is Not Dispositive in Overcoming a Rebuttable Presumption that a Disputed Term Does Not Invoke § 112(f)*

The third pre-*Lighting World* criterion considers whether a disputed claim term recites a function. Although the absence of a function suggests that a disputed limitation does not invoke § 112(f), the presence of a function within a disputed limitation does not necessarily indicate that the disputed limitation should invoke § 112(f). For example, courts have found that a claim limitation that recites a structural term and a function does not invoke § 112(f).¹⁸⁹ Accordingly, although the third criterion indicates that a non-“means” term that lacks a function may not invoke § 112(f), it does

188. See *Al-Site*, 174 F.3d 1308, 1318 (Fed. Cir. 1999) (finding that “eyeglass hanger member . . . made from flat sheet material” did not invoke § 112(f)).

189. See *Apex, Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364, 1372 (“[A] first interface circuit for receiving keyboard and cursor control device signals from the workstation.”).

not provide sufficient information to fully rebut a presumption that § 112(f) does not apply to a disputed claim limitation.

V. CONCLUSION

Williamson II is a large step forward in addressing the problem of overly broad functional claiming. However, while *Williamson II* has overruled the strong presumption, it has not fully addressed other common law doctrines that have developed during the tenure of the common law strong presumption. Most notably, while *Williamson II* reasserts *Greenberg's* approach of determining whether a term is understood by a person of ordinary skill to have structure, *Williamson II* does not address the expansion via *MIT* and *Apple*, which used functional adjectival qualifiers to support structural determination of compound terms that are not conventional nonce words (e.g., “heuristic”). Furthermore, *Williamson II* does not address the role of objective versus intrinsic evidence in determining whether a term invokes § 112(f). A proposed framework based on pre-*Lighting World* criteria would help implement the *Greenberg* approach set by *Williamson II*.

APPENDIX I: LIST OF DISTRICT COURT CASES

Pre-Williamson II Cases (citing to Lighting World in prior 2 years)

Tentative Claim Construction Order, *Catheter Connections, Inc. v. Ivera Med. Corp.*, No. 14-CV-2208-H-RBB, 2015 WL 6511545 (S.D. Cal. May 22, 2015).

Memorandum Opinion and Order Regarding Claim Construction, *Collaborative Agreements, LLC v. Adobe Sys. Inc.*, No. A-14-CV-356-LY, 2015 WL 2250391 (W.D. Tex. May 12, 2015).

Memorandum Opinion and Order, *ACQIS LLC v. Alcatel-Lucent USA, Inc.*, No. 6:13-CV-638, 2015 WL 1737853 (E.D. Tex. Apr. 13, 2015).

Order Construction Disputed Patent Claim Terms, *Potter Voice Techs. LLC v. Google, Inc.*, No. 12-CV-01096-REB-CBS, 2015 WL 2265467 (D. Colo. May 12, 2015).

Memorandum and Order Construing Disputed Claim Terms, *Transocean Offshore Deepwater Drilling, Inc. v. Pac. Drilling, Inc.*, No. CIV.A. H-13-1088, 2015 WL 3422410 (S.D. Tex. May 27, 2015).

Memorandum Opinion and Order, *SimpleAir, Inc. v. Google, Inc.*, No. 2:13-CV-0937-JRG, 2015 WL 1906016 (E.D. Tex. Apr. 27, 2015).

Order, *ESCO Corp. v. Cashman Equip. Co.*, No. 2:12-CV-01545-RCJ, 2015 WL 2219625 (D. Nev. May 12, 2015).

Order Construing Disputed Patent Claim Terms & Resolving Motions for Summary Judgment, *Wyers Prods. Grp., Inc. v. Cequent Performance Prods., Inc.*, No. 12-CV-02640-REB-KIT, 2015 WL 1515896 (D. Colo. Mar. 30, 2015).

Claim Construction Memorandum and Order, *Mobile Telecomms. Techs., LLC v. Sprint Nextel Corp.*, No. 2:12-CV-832-JRG-RSP, 2015 WL 5314106 (E.D. Tex. May 2, 2015).

Memorandum Order, *Intellectual Ventures I, LLC v. Canon, Inc.*, No. CV 13-473-SLR, 2015 WL 1458035 (D. Del. Mar. 27, 2015).

Memorandum Opinion and Order, *E-Watch, Inc. v. Apple, Inc.*, No. 2:13-CV-1061-JRG-RSP, 2015 WL 1387947 (E.D. Tex. Mar. 25, 2015).

Memorandum Opinion and Order, *Georgetown Rail Equip. Co. v. Holland L.P.*, No. 6:13-CV-366-JDL, 2014 WL 3885956 (E.D. Tex. Aug. 7, 2014).

Memorandum Opinion and Order, *Lochner Techs., LLC v. Lenovo (United States) Inc.*, No. 2:10-CV-430-JRG, 2015 WL 293625 (E.D. Tex. Jan. 21, 2015).

Order Construing Claims of U.S. Patent No. 6,799,084, *Grobler v. Apple, Inc.*, No. 12-CV-01534-JST, 2014 WL 1867043 (N.D. Cal. May 6, 2014).

Pre-Williamson II Cases (citing to Lighting World in prior 2 years)

Memorandum Opinion and Order, *Invensys Sys., Inc. v. Emerson Elec. Co.*, 63 F. Supp. 3d 663 (E.D. Tex. Aug. 6, 2014).

Memorandum Opinion and Order, *Vantage Point Tech., Inc. v. Amazon.com, Inc.*, No. 2:13-CV-909-JRG, 2015 WL 575167 (E.D. Tex. Feb. 11, 2015).

Order Adopting Report and Recommendation of U.S. Magistrate Judge, *Smartflash LLC v. Apple Inc.*, 77 F. Supp. 3d 535 (E.D. Tex. Dec. 4, 2014).

Memorandum Opinion and Order, *Blue Spike, LLC v. Texas Instruments, Inc.*, No. 6:12-CV-499-MHSCMC, 2014 WL 5299320 (E.D. Tex. Oct. 16, 2014).

Order Following Claim Construction Hearing, *Guitar Apprentice, Inc. v. Ubisoft, Inc.*, 97 F. Supp. 3d 965 (W.D. Tenn. Feb. 26, 2015).

Opinion and Order, *Certusview Techs. LLC v. S & N Locating Servs., LLC*, No. 2:13CV346, 2014 WL 2090550 (E.D. Va. May 16, 2014).

Memorandum Opinion, *St. Jude Med. v. Volcano Corp.*, No. CV 12-441-RGA, 2014 WL 1619157 (D. Del. Apr. 22, 2014).

Claim Construction Order, *J & M Mfg. Co. v. Unverferth Mfg. Co.*, No. 1:12-CV-931, 2014 WL 6684714 (S.D. Ohio Nov. 25, 2014).

Memorandum and Order, *WhitServe LLC v. GoDaddy.com, Inc.*, 65 F. Supp. 3d 317 (D. Conn. Nov. 4, 2014).

Memorandum Opinion, *Transcend Med., Inc. v. Glaukos Corp.*, No. CV 13-830, 2015 WL 263612 (D. Del. Jan. 16, 2015).

Order Construing Claims of U.S. Patent Nos. 6,305,880; 6,524,031; 6,793,442; and 7,217,065, *TRIC Tools, Inc. v. TT Techs., Inc.*, No. 12-CV-03490-JST, 2014 WL 2880028 (N.D. Cal. June 24, 2014).

Order Following Claim Construction Hearing, *WCM Indus., Inc. v. IPS Corp.*, No. 2:13-CV-02019-JPM, 2014 WL 8508559 (W.D. Tenn. Nov. 10, 2014).

Claim Construction Order, *Eon Corp. IP Holdings v. AT & T Mobility LLC*, No. CIV. 11-1555 SCC, 2014 WL 1666441 (D.P.R. Apr. 25, 2014).

Memorandum Opinion, *Semcon Tech, LLC v. Micron Tech., Inc.*, No. CV 12-532-RGA, 2014 WL 4447017 (D. Del. Sept. 9, 2014).

Post-Williamson II Cases (citing to Williamson II)

Supplemental Claim-Construction Order, *Farstone Tech., Inc. v. Apple, Inc.*, No. 813CV1537ODWJEMX, 2015 WL 5898273 (C.D. Cal. Oct. 8, 2015).

Memorandum Order, *M2M Solutions LLC v. Sierra Wireless Am., Inc.*, No. CV 12-30-RGA, 2015 WL 5826816 (D. Del. Oct. 2, 2015).

Memorandum Opinion and Order, *Not Dead Yet Mfg., Inc. v. Pride Solutions, LLC*, No. 13 C 3418, 2015 WL 5829761 (N.D. Ill. Oct. 5, 2015).

Order and Memorandum of Decision on Claim Construction, *Voice Domain Techs., LLC v. Apple, Inc.*, No. CV 13-40138-TSH, 2015 WL 4638577 (D. Mass. Aug. 4, 2015).

Supplemental Claim Construction Memorandum and Order, *Genband USA LLC v. Metaswitch Networks Ltd.*, No. 2:14-CV-33-JRG-RSP, 2015 WL 4722185, (E.D. Tex. Aug. 7, 2015).

Memorandum Opinion and Order, *Smartflash LLC v. Apple, Inc.*, No. 6:13-CV-447-JRG-KNM, 2015 WL 4208754 (E.D. Tex. July 7, 2015).

Media Rights Techs., Inc. v. Capital One Fin. Corp., 800 F.3d 1366 (Fed. Cir. 2015).

Memorandum Opinion, *Sarif Biomedical LLC v. Brainlab, Inc.*, No. CV 13-846-LPS, 2015 WL 5072085 (D. Del. Aug. 26, 2015).

Order Construing the Terms of U.S. Patent Nos. 5,489,295; 5,993,481; 6,302,906; 5,676,696, *Lifepoint Scis. LLC v. Endologix, Inc.*, No. CV 12-1791-GMS, 2015 WL 4141819 (D. Del. July 9, 2015).

Ruling on Claim Construction, *Scarborough v. Integricert, LLC*, No. CIV. 6:12-0396, 2015 WL 5099128 (W.D. La. Aug. 31, 2015).

Memorandum Opinion and Order Regarding Claim Construction, *Joao Control & Monitoring Systems, LLC v. Protect Am., Inc.*, No. 1-14-CV-134-LY, 2015 WL 4937464 (W.D. Tex. Aug. 18, 2015).

Claim Construction Memorandum and Order, *E2E Processing, Inc. v. Cabela's, Inc.*, No. 2:14-CV-36-JRG-RSP, 2015 WL 4051423 (E.D. Tex. July 2, 2015).

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Claim Construction Order for U.S. Patent No. 4,977,577, *Northpeak Wireless, LLC v. 3Com Corp.*, No. 09-CV-00602-SI, 2015 WL 5117020 (N.D. Cal. Aug. 28, 2015).

Memorandum Order, *StrikeForce Techs., Inc. v. PhoneFactor, Inc.*, No. 13-490-RGA, 2015 WL 5708577 (D. Del. Sept. 29, 2015).

Memorandum Opinion, *Custom Media Techs. LLC v. Comcast Cable Commc'ns, LLC*, No. CV13-1421-LPS, 2015 WL 4743671, (D. Del. Aug. 11, 2015).

Order, *Contour Hardening, Inc. v. Vanair Mfg., Inc.*, No. 1:14-CV-00026-JMS-MJD, 2015 WL 5155399 (S.D. Ind. Sept. 2, 2015).

Claim Construction Order, *Krausz Indus. Ltd. v. Smith-Blair, Inc.*, No. 5:12-CV-570-FL, 2015 WL 4948030 (E.D.N.C. Aug. 3, 2015).

Decision and Order, *Gradient Enters., Inc. v. Skype Techs. S.A.*, No. 10-CV-6712L, 2015 WL 5567926 (W.D.N.Y. Sept. 22, 2015).

Memorandum and Order, *Telinit Techs., LLC v. Alteva, Inc.*, No. 2:14-CV-369, 2015 WL 5578604 (E.D. Tex. Sept. 21, 2015).

Memorandum Opinion and Order Regarding Claims Construction, *Intellectual Ventures II, LLC v. AT & T Corp.*, No. 1:13-CV-116-LY, 2015 WL 4138590 (W.D. Tex. July 8, 2015)

APPENDIX II: LIST OF PTAB CASES CONSIDERED

PTAB Cases Considered

Decision on Appeal, *Ex parte Sebastian*, No. 2013-006223, 2015 WL 4608191 (P.T.A.B. Sept. 30, 2015).

Decision on Request for Rehearing, *Ex parte Davis*, No. 2013-001364, 2015 WL 5965089 (P.T.A.B. Sept. 14, 2015).

Decision on Institution of Inter Partes Review, *Facebook, Inc. v. TLI Commc'ns, LLC*, No. IPR2015-00778, 2015 WL 5139353 (P.T.A.B. Aug. 28, 2015).

Decision on Appeal, *Ex parte Eugene v. Gonze*, No. 2013-007388, 2015 WL 5171043 (P.T.A.B. Aug. 28, 2015).

Decision on Institution of Inter Partes Review, *J Squared, Inc. v. Saunder Mfg. Co.*, No. IPR2015-00774, 2015 WL 5169145 (P.T.A.B. Aug. 24, 2015).

Decision on Appeal, *Ex parte Rodriguez*, No. 2012-010303, 2015 WL 5000866 (P.T.A.B. Aug. 20, 2015).

Decision on Institution of Inter Partes Review, *Toyota Motor Corp. v. Cellport Sys., Inc.*, No. IPR2015-00633, 2015 WL 4934778 (P.T.A.B. Aug. 14, 2015).

Decision on Institution of Inter Partes Review, *InContact, Inc. v. Microlog-Corp.*, No. IPR2015-00560, 2015 WL 4639627 (P.T.A.B. Aug. 14, 2015).

Decision on Appeal, *Ex parte Lu*, No. 2013-006610, 2015 WL 5999287 (P.T.A.B. Oct. 13, 2015).

PTAB Cases Considered

Final Written Decision, *Gillette Co., v. Zond, LLC*, No. IPR2015-00726, 2015 WL 5781660 (P.T.A.B. Sept. 29, 2015).

Decision on Appeal, *Ex parte Lemoine*, No. 2013-008531, 2015 WL 6165130 (P.T.A.B. Sept. 29, 2015).

Final Written Decision, *Global Foundries U.S., Inc., v. Zond, LLC*, No. IPR2014-01098, 2015 WL 5719798 (P.T.A.B. Sept. 25, 2015).

Decision on Appeal, *Ex parte Kermani*, No. 2013-000409, 2015 WL 5317320 (P.T.A.B. Sept. 9, 2015).

Decision on Appeal, *Ex parte Zugenmaier*, No. 2012-012229, 2015 WL 5144129 (P.T.A.B. Aug. 31, 2015).

Decision on Appeal, *Ex parte Bissantz*, No. 2013-005636, 2015 WL 5073656 (P.T.A.B. Aug. 27, 2015).

Decision on Institution of Inter Partes Review, *WhatsApp, Inc., v. Triplay, Inc.*, No. IPR2015-00740, 2015 WL 5029261 (P.T.A.B. Aug. 21, 2015).

Decision Denying Institution of Inter Partes Review, *Hopkins Mfg. Corp., v. Cequent Performance Prods., Inc.*, No. IPR2015-00616, 2015 WL 4941778 (P.T.A.B. Aug. 17, 2015).

Decision on Institution of Inter Partes Review, *Under Armour, Inc. v. Adidas AG*, No. IPR2015-00697, 2015 WL 4934626 (P.T.A.B. Aug. 14, 2015).

Decision Denying Institution of Inter Partes Review, *Toyota Motor Corp., v. Cellport Sys., Inc.*, No. IPR2015-00634, 2015 WL 4934779 (P.T.A.B. Aug. 14, 2015).

Decision on Appeal, *Ex parte Shimizu*, No. 2013-005039, 2015 WL 4607921 (P.T.A.B. July 30, 2015).

Decision on Appeal, *Ex parte Ge*, No. 2013-006103, 2015 WL 4151294 (P.T.A.B. July 6, 2015).

Decision Denying Institution of Inter Partes Review, *Apple, Inc., v. ContentGuard Holdings, Inc.*, No. IPR2015-00455, 2015 WL 4264956 (P.T.A.B. July 6, 2015).

Final Written Decision, *Medtronic, Inc. v. Norred*, No. IPR2014-00395, 2015 WL 3957836 (P.T.A.B. June 25, 2015).

Decision on Appeal, *Ex parte Nakai*, No. 2012-007806, 2015 WL 3922025, (P.T.A.B. June 22, 2015).

Final Written Decision, *Stats LLC, Petitioner, v. Hockeyline, Inc.*, No. IPR2014-00510, 2015 WL 5461570 (P.T.A.B. Sept. 15, 2015).
